TECHNOLOGY DEPT.

A National Newspaper for Every Branch of the Industry

First Copy

Automotive Daily News

PASSENGER TRUCK PARTS, SHOP EQUIPMENT TIRES ACCESSORIES

Vol. 8. No. 981 | Entered as second-class matter Aug. 27, 1925, Post Office, N. Y., N. Y., Under Act of March 3, 1879. | NEW YORK, FRIDAY, JUNE 28, 1929 | 10 Cents. $12 per year.

PARTS, ACCESSORY BUSINESS HIGH IN MAY, SAYS M. E. A.

Industry Well Ahead of Previous Years; 2% Over April

NEW YORK, June 27.—The automotive parts and accessory industry had another satisfactory month in May, with business running well ahead of previous years, according to the Motor and Equipment Association. An expected seasonal slowing up in operation made its appearance, but the decline from the record April level was a moderate one.

While June will show some further recessions a record first half is assured. The tremendous momentum gathered by the industry in the first five months of the year will carry it through the summer season and into the third quarter well ahead of the same period in previous years.

The sales volume of automotive wholesaler members in the United States and Canada in May was 2 per cent. ahead of the high April figures.

Aggregate shipments in May of several hundred manufacturers supplying parts and accessories to the car and truck manufacturers and parts, accessories and garage repair equipment to the wholesale trade were 245 per cent. of the January, 1925, base index of 100, as compared with 254 in April, 241 in March, 201 in May last year.

Parts-accessory manufacturers selling their products to the car and truck manufacturers for original equipment made shipments aggregating 278 per cent. of the January, 1925, base, as compared with 287 in April and 215 in May last year.

Shipments to the wholesale trade in May by manufacturers of replacement parts were 169 per cent. of January, 1925, as compared with 174 in April, and 183 in May last year. Unusually heavy business that developed earlier than usual this year is responsible for May sales running below last May. A

(Continued on Page 2)

Willys Returns From Europe

JOHN N. WILLYS (right), president of Willys-Overland, was enthusiastic about American automotive export growth, as he returned from Europe on the Leviathan, accompanied by Sir William Letts, managing director of the Willys-Overland interests in England. Mr. Willys and Sir William were photographed just before they left the steamer in New York Wednesday. (A. D. N. Photo.)

People of South Dakota To Vote on 3% Car Tax

Aberdeen, S. D., June 27.—The Supreme Court handed down a decision last night whereby the 3 per cent. tax on automobiles, which was to go into effect July 1, is referred to a vote of the people. The Automobile Dealers' Association of South Dakota, E. R. Judy, president, petitioned to have the law referred and the same was taken to the Supreme Court.

NEBRASKA GAS TAX IN MAY TOTALS $737,000

Lincoln, Neb., June 27.—Gasoline tax collections for May totaled $737,000 as reported by the State Collection Bureau, a record total. A total of 656 companies reported. Tax collections to date, from April 1, 1925, exceed $15,500,000.

WILLYS PREDICTS BIG EXPORT GAIN

Sees Large Field Abroad For American Motor Cars

New York, June 27.—John N. Willys, president of Willys-Overland, on his return yesterday from Europe aboard the Leviathan, predicted American automotive exports of $700,000,000 this year and said the position of his company at this time was thoroughly satisfactory.

Mr. Willys was accompanied by Sir William Letts, managing director of Willys-Overland Crossley, Ltd., of Manchester, Eng.

"Wherever one goes in Europe it is evident that the products of the American motor industry are in high repute," said Mr. Willys. "Furthermore, general business conditions are improving so rapidly in many sections that the people have money to buy more cars and trucks than previously. In view of the fact that the automotive export trade has shown a steady increase each year for five years, I think that by 1931, and possibly in 1930, the motor industry will be shipping a billion dollars' worth annually of American products to foreign countries.

"As for the Willys-Overland company's position in the industry, I am thoroughly satisfied with present conditions and future outlook. The company is completing one of the best six-month periods in its history. Sales will approximate 200,000 cars for the half year. The new Willys-Knight Great Six, advance models of which received a gratifying reception at the national automobile shows, will be placed on the market in July, and should be an important factor in Willys-Knight business during the last half of the year.

"This, coupled with increased sales of our entire line of six-cylinder models, may be expected to bring about a substantial development in profits during the last half of 1929. It is not improbable that the Willys-Knight line will contribute as much as 50 per cent. to the last half profits.

Fuel Distribution and Mixture Features S. A. E. Sessions; Discuss Buses

SARANAC INN, Saranac Lake, N. Y., June 27.—Fuel mixture and methods of testing and securing the proper distribution of fuel to the cylinders of the present-day engine featured the technical sessions of the Society of Automotive Engineers at the summer meeting here today.

The Transportation Conference, which was in session at the same time as the Mixture and Distribution Conference, also brought forth an interesting paper on "Long Distance Bus Transportation," by R. E. Plimpton. The meeting was presided over by H. F. Fritch.

The Mixture and Distribution Conference, however, was evidently considered the more important of the two and shared honors with golf and other out-of-door sports in the way of attendance and interest.

This year's program has been particularly well built up, and the technical subjects have led from one phase of engineering to the other with unique sequence. The discussion on Wednesday was on combustion and combustion chamber design. Today's papers and discussion consisted of analysis of gaes after combustion has taken place in an effort to improve combustion through defining more nearly perfect air-fuel mixture ratio and improved distribution of the fuel to the cylinders.

Some valuable data on air-fuel ratios were presented by H. W. Best of Sheffield Scientific School and Capt. W. C. Thee of the Massachusetts Institute of Technology. C. F. Taylor of the Massachusetts Institute of Technology and E. S. Marks of H. H. Franklin Manufacturing Company gave some interesting pointers on fuel distribution.

These discussions are considered highly important, not only from the standpoint of improved engine efficiency, but also from the standpoint of reducing fuel consumption, lowering operating costs, improving fuel qualities and obtaining more nearly complete combustion with consequent reduction of carbon monoxide in the exhaust.

Others taking part in the discus-

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S. A. E. papers presented at the meeting at Saranac Inn yesterday will be found on Pages 5 and 6 of this issue.

Gardner Ready to Build Car for Sears, Roebuck If Stockholders Approve

ST. LOUIS, June 27.—The Gardner Motor Car Company will ask stockholders at a meeting in New York City on August 3 to approve a $2,500,000 expansion program which will permit the manufacture of a car to be sold by Sears, Roebuck & Co., and the entry of the company into the aviation industry on a larger scale.

This announcement was made today by R. E. Lynes, assistant secretary of the company, and later confirmed by the company's publicity representatives.

The financing of the expansion program will be provided for by the issuance of 200,000 additional shares of common stock at $14 a share. To provide for this new stock the capitalization will be increased from 300,000 shares of $5 par value stock to 500,000 shares, notice of this increase having been given to the New York Stock Exchange yesterday.

"There will be large additions constructed to the plants of the Gardner Company, both in St. Louis and East St. Louis," Mr. Lynes said. "This program will in no way conflict with either the present policy or the production of Gardner cars, but on the contrary there will be an increase in the output of the present Gardner car."

While it was not possible to obtain at this time a detailed statement regarding the new car to be built for the mail order house or the airplane to be constructed, it was understood that the airplane will sell at prices from $3,500 to $15,000.

When first reports of the Sears, Roebuck car became public several weeks ago, the price of the car was put at around $500. However, there has been no official verification of this price.

There has been no indication as yet as to the methods which Sears, Roebuck & Co. will follow in retailing the Gardner-made car. This will involve something entirely new in automobile merchandising. If the company follows the methods used in selling other large items, such as ready-cut houses, it is probable that distributing points will be established in all sections of the country. The company will have exclusive rights to the sale of this car.

Gardner has been interested in aviation since last year, when it formed Parks Aircraft, Inc., and retained the controlling interest. This company has an airport in St. Louis. It was indicated some months ago that Gardner intended to build airplanes, and today's announcement confirms this report.

GENERAL MOTORS FORMS NEW CHINA SUBSIDIARY

New York, June 27.—General Motors Corporation has formed a new subsidiary, to be known as General Motors China, Inc., which will handle operations of the company in China. The China company was incorporated in Delaware this week. Headquarters will be in Shanghai. The nominal capitalization is $200,000.

Up-State New York Plants At Capacity in Operation

ALBANY, N. Y., June 27.—Review of conditions in the automotive field of this district for the last week indicates that there is no slackening in production, particularly in the parts and accessory plants. With top-notch output being maintained in virtually all branches of the industry it is evident that the busiest summer in several years will be experienced by leading firms.

A number of firms in the district are continuing to take on additional workers. Representatives of the Fox-Springer Corporation, Richfield Springs, have been combing this territory for skilled mechanics experienced in making car bodies, and it is indicated that difficulty is being met with in obtaining the required quota of workers.

Among the other firms which have been calling for help are the Utica Radiator Corporation, Fort Stanwix Manufacturing Corporation, Rome, and the National Automotive Fibres Company, at Watertford. In most cases the new workers are being employed on assembly operations in order to start shipments of the finished products from the various factories on contract time.

The Shell Eastern Petroleum Company has purchased a tract of land at Rensselaer consisting of 20 acres with frontage on the Hudson River. The company is a subsidiary of the Shell Union Oil Corporation which operates the Southwest and now plans to make its debut in the East.

Both the Utica and Buffalo factories of the Dunlop Tire and Rubber Company are now running at full capacity, employing about 1,100 workers. The taking on of additional help at the Utica plant because of increased volume of orders is allowing an output of about 80,000 cords a week, which is then shippen to the finishing plant at Buffalo. The firm estimates its pay roll annually at $500,000.

Business in textile plants turning

(Continued on Page 11)

THIS ISSUE of Automotive Daily News is being placed in the hands of every well-known engineer in the automotive field. Engineers at the Society of Automotive Engineers meeting at Saranac Lake, N. Y., will receive the paper.

Parts, Accessory Business High in May, M.E.A. Reports

(Continued from Page 1)

record first half year has been marked up by replacement parts makers.

Accessory shipments to the wholesale trade in May were 91 per cent., as compared with 91 in April, and 113 in May last year. The accessory business, which has been adversely affected for several years by standard equipment at the car plants, and also by the policy of accessory distribution of some car manufacturers, has shown an improvement this year.

Service equipment shipments, that is, repair shop machinery and tools, of member companies in May were 200 of the January, 1925, base, as compared with 227 in April and 157 in May last year. Service equipment manufacturers' business has been running well ahead of all previous years, and is apparently started toward a record for 1929.

Detroit, June 27.—Numerous inquiries regarding the Model A Ford cabriolet caused announcement by the Ford Motor Company this week that this new body type is now being produced at the rate of approximately 200 units daily, and that production is being increased rapidly.

Monroe Offers Hydraulic Two-Way Shock Absorber

MONROE, MICH., June 27.—A new two-way hydraulic shock absorber is announced here today by the Monroe Auto Equipment Company. The new shock eliminator is simple in design, with two opposed pistons on the same plane, and using a heat and cold resisting medium to uild up counter resistance to road shocks.

The entire unit is light in weight and is so constructed that it governs the action of the springs in both compression and rebound, causing them to compress softly and return to normal gently.

The connecting rods of the two-way are cushioned by blocks of resilient rubber which insulates the body of the car from noise and vibration. According to the manufacturers, the new device is not affected by temperature changes and simple adjustments may be made to govern the amount of spring control. The two-way will be marketed through a network of dealers covering all parts of the country and retail in sets of four, installed, for $115.

INDIA AND FALLS MERGER NEGOTIATIONS CALLED OFF

Akron, O., June 27.—Negotiations between India Tire and Rubber Company and Falls Rubber Company for consolidation of the two companies have been dropped. Falls company stockholders have authorized a recapitalization plan that will allow additional working capital and the company will continue as a separate unit.

SAMSON BEGINS OPERATIONS IN NEW LOS ANGELES PLANT

Los Angeles, June 27.—The Samson Tire and Rubber Corporation has started operations in the company's new plant at Los Angeles. The plant will have a capacity of 6,000 tires and 10,000 tubes a day, and within sixty days all operations will be centered in the new plant, and thereafter many benefits and economies of centralized manufacturing will be effected.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOBILE DAILY NEWS BRING RESULTS

SPARKS from DETROIT

By Fred Kingsbury—Detroit Editor

Our Industry in Forefront In Humanitarian Campaigns

AUTOMOBILE men and organizations are usually in the forefront when any worthy object is being sought or when anything can be done for the benefit of mankind. During the last year there have been several campaigns for hospitals and much charity work, and automobile men have been among the first and the largest donors of subscriptions in this work. In fact, they have been largely responsible in making it possible for many institutions to go ahead with their work of aiding the needly and helpless.

Fred Kingsbury

The latest campaign is that for St. Joseph's Hospital in Flint, Mich., and one of the first donors was the General Motors Corporation, which gave $150,000 toward the fund.

Perhaps it is this attitude, on the part of large and small automobile manufacturers and executives of various companies in Michigan which has made the residents of this state so loyal and which have contributed so much to the motor car business in this section.

* * *

Production at Normal

RUMORS are going the rounds again that "there has been a great curtailment in automobile production." There is absolutely no truth in these statements, which are far from the facts. The majority of the motor car manufacturing plants are on a high production basis at the present time.

Of course, there has been a curtailment at some points due, as in many years past, to seasonal requirements and the fact that some of these plants have closed down for inventory and to allow their employees a vacation.

When final production figures for June are compiled, it will be seen that the plants have been working on normal production schedules throughout the month.

It is true that there has been a considerable falling off in retail sales in Canada, but that does not necessarily mean that the same condition obtains in the United States.

In Canada, farmers are from six weeks to eight weeks behind in their work due to the backward season. This, of course, means that the farmers have stopped buying, but it is only temporary.

Most of the car manufacturing plants in Canada are turning out automobiles for export this month.

* * *

More Good Roads for California

AUTOMOBILE dealers in California have always been interested in good roads—a statement that cannot be said for dealers in some other sections of the country.

Now comes word from the Sunset state that the sum of two millions of dollars is being spent in Mono and Inyo counties to improve the highways into the high Sierras, a gateway to thousands of wonder spots for the motorist.

Every automobile dealer in the country should be interested in good highways and take an active part in boosting them, if for no other reason than that they provide more floor space for cars and, with this added floor space on which to operate motors, he can sell more automobiles.

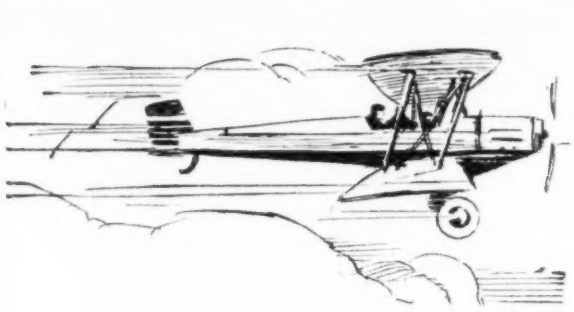
STOCK T-N DOUBLE CARRIERS NOW

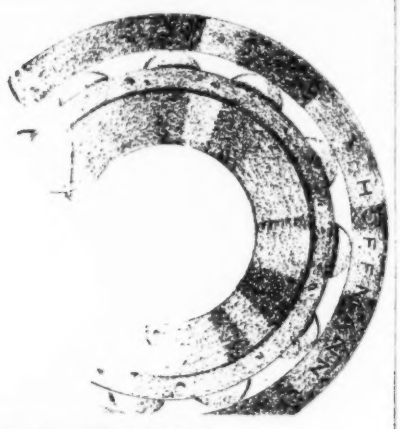
7th Year Successful Service EVERY TOURIST OUGHT TO CARRY 2 SPARE TIRES

RETAIL PRICE PER SET $3.00

DISTRIBUTORS EVERYWHERE

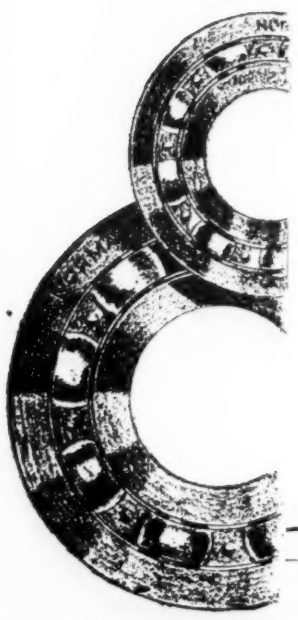
THOMPSON-NEAYLON MFG. CO., CHICAGO





NORMA-HOFFMANN

PRECISION BEARINGS

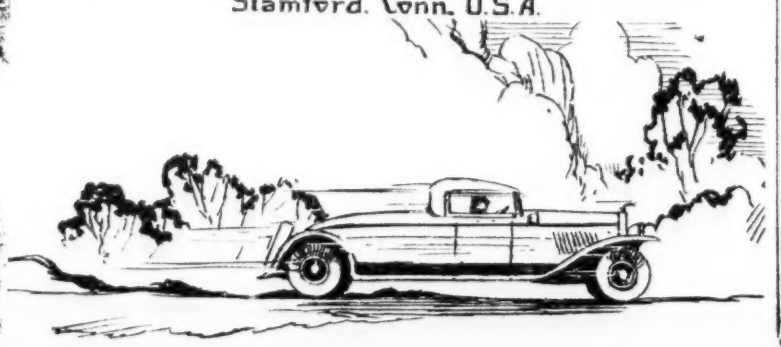


In the full range of sizes, in Light, Medium and Heavy Series.

—"the difference in service is so much greater than the few cents in price."

NORMA-HOFFMANN BEARINGS CORPORATION

Stamford, Conn. U.S.A.



CAN YOU BEAT IT?

A Class B War Truck only 11 years, so far, on one set of chassis bearings!

But they look good for *11 years more*—

because they are served by the

Myers MAGAZINE OILING System

At the CAMP HOLABIRD SHOW recently the most notable exhibit was an army truck chassis over 11 years old—with its bearings almost like new, though the engine, transmission, etc., were all worn out.

Why not give truck, bus, taxi operators something that surely reduces attention and maintenance? It makes 'em real friendly.

CHASSIS LUBRICATING CO.

Rahway, N. J.

GOULD ALLEN CAPITOL BUILDING DETROIT

N. J. Truck Registrations Gain 56.4% in First 5 Months

Unit Gain Is Slightly Above Ford Increase; New Makes Popular

TRENTON, N. J., June 27. — Truck registrations for the first five months of this year showed a gain of 56.4 per cent. over the same period of 1928, and indicated that while new car registrations in the state showed a seasonal decline in May, New Jersey truck registrations continued to increase.

For the five months' period the total truck registration was 7,257 as compared with 4,639 in the first five months of 1928, a gain of 2,618 units, which is slightly higher than the gain made by Ford.

With a total of 2,699 registrations as compared with 445 in 1928, Ford showed a unit gain of 2,254, or 506.5 per cent. The Ford registration is practically one-third of the entire new truck registration in the state in the first five months.

Of the twenty-seven makes of trucks, listed below, only five showed declines from the 1928 figures. Seven new truck makes, also listed, show that they are getting excellent reception in the state.

Next to Ford the Chevrolet truck showed the biggest unit gain, with 147 more trucks than were sold in the previous record year of 1928, but showed a per cent. gain of but 7.7. Chevrolet registered 2,060 trucks in the first five months, 639 less than Ford, as against Chevrolet's 1,913 in the same period last year and Ford's 445.

Rehberger, whose plant is located in this state, made a 100 per cent. gain, while Mack, which also has plants in New Jersey, recorded an increase of 39.5 per cent. Trucks practically making their debut this year accounted for 550 registrations.

The five months' registration, compared with the 1928 period, showing unit gain or loss and percentage gain or loss, follows:

Make	1929	1928	Pc. Gain or loss
Amer.-La France	21	27	*22.2
Autocar	99	55	80.
Brockway	91	74	22.9
Chevrolet	2060	1913	7.7
Day-Elder	43	42	2.4
Diamond-T	34	15	126.6
Dodge	352	..	..
Fargo	57	..	..
Federal	79	53	49.1
Ford	2699	445	506.5
Garford	14	6	133.3
G.M.C.	222	230	*3.5
International	191	157	21.6
Maccar	39	22	77.3
Mack	293	210	39.5
Nash	17	..	..
Pierce-Arrow	42	24	75.
Pontiac	14	23	*39.1
Rehberger	8	4	100.
Reo	254	344	*26.1
Rugby	21	..	..
Sterling	39	25	56.
Stewart	29	37	*21.7
Studebaker	55	..	..
Whippet	77	..	..
White	136	116	17.2
Willys-Knight	20	..	..
Miscellaneous	251	817	..
Totals	7257	4639	56.4

*Loss.

TEXAS CAR DEALERS PLAN DISTRICT MEETS

Dallas, Tex., June 27.—Plans for five district conventions for automobile dealers to be held in this state within the next few months were laid down at a meeting of the board of directors held in this city this week and presided over by B. B. Owen, president. These meetings will be held in Amarillo, Waco, Tyler, Abilene and Houston. Ray Shelton of Houston was named chairman of the committee in charge of programs for these meets.

Each meeting will consist of a general discussion of automotive problems, the subjects embracing, "Unjust Insurance Rates Borne by Automotive Dealers," "The Growing Restrictions on Commissions Paid Dealers," "Proper Use of Dealer License Plates," "What the State Organization Can Do to Help the Average Dealer," "Cutting Down the Bootlegging of Motor Cars," "Saving a Fair Net Profit from Gross Income," and "Improving Sales Organizations."

Atterbury Adds Three Stylish Sixes

A new series of Sixes has just been announced in 2½, 3 and 4-ton capacities by the Atterbury Motor Car Company, Buffalo, N. Y. The new line is known as the Atterbury Marathon Sixes.

Stylishness is a feature in the new design. Beginning at the radiator and carrying right through the new narrow, high hood, with horizontal louvres, coupe type cab, long low chassis with Budd steel disk wheels and heavy duty pneumatic tires with dual rears as standerd equipment, emphasize the smooth, fast, low-to-the-ground design.

Power for quick acceleration in congested traffic as well as fast, hour after hour, long distance inter-city trucking, is provided by overhead valve engine developing 70, 80 and 90 horsepower in the 2½, 3 and 4-ton models respectively.

Engine equipment includes an air cleaner and oil filter. Thermostatic water control assures the most efficient operating temperature and quick warm-up in cool weather.

The engine in the 2½-ton is 4 inch by 4¼ inch bore and stroke, developing 73 horse power. In the 3-ton it is 4 inch by 4½ inch bore and stroke, developing 80 horse power, and in the 4-ton is 4⅛ by 4¾ bore and stroke, developin 90 horse power.

The 2½ and 3 ton models are equipped with Lockheed four-wheel hydraulic brakes energized by the Vacuum Booster. The four-ton model is equipped with latest type brakes on the rear wheels and also has the added power of the Vacuum Booster.

SUPERIOR MANUFACTURING

GENERAL ELECTRIC has a large factory at Lynn, Mass., exclusively devoted to the manufacture of non-metallic gears; it has the largest output of silent-gear materials of any factory in the world; it employs the most modern machinery, the most modern methods, the most skilled workmen.

The basic fabric, woven to exclusive specifications, is coated with a synthetic resin in an exclusive patented process. The material is die-formed to dimensions, and the laminations are axially staggered to get the bias strength of the canvas. The web is made entirely of original canvas. No ground-up trimmings are used in the web. This preserves the resilience of the material and guards permanently against fracture due to flexing. Every step in this manufacture is guarded by strict laboratory control and exacting test methods.

There is no compromise with accuracy in a good gear drive—it is a token of good manufacture throughout the car.

TEXTOLITE TIMING GEARS

210-69

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GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y., SALES OFFICES IN PRINCIPAL CITIES

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"Of, By and For the Entire Automotive Industry"

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Member A. B. C.

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Thoughtless Theft

THIS is the open season for thoughtless depredations on farm crops and property. When we say "thoughtless" we mean in most cases, for bands of professional thieves do devote some attention to separating the hard working farmer from growing crops and from other property.

However, rural authorities agree that by far the greater part of the loss suffered by the farmers comes from thoughtless tourists, who would be shocked if they were told that they were stealing something. It seems such a trivial matter to remove a basket of apples or some roasting ears or a watermelon or two from a wayside farm lot, that people who never would knowingly appropriate anything that did not belong to them carry away an aggregate of several millions of dollars worth of produce each summer in this land of the free.

In New York state this careless failure to distinguish between meum and tuum has gone so far that farm bureaus have formed vigilance committees. These committees erect signs on the farms of their district warning tourists that taking produce is stealing and offering liberal rewards for the apprehension and conviction of those who persist in these depredations. It is reported that these notices have had the effect of cutting down this form of petty theft, which indicates that most of it was thoughtless in kind. However, there still is room for improvement and automotive bodies can perform a valuable office by warning the general motoring public, which has been most to blame, that the farmer's rights in his crops are exactly the same as the merchant's in his stock and that taking one is just as much stealing as the other.

Overproduction?

PEOPLE who have been viewing with alarm the production schedule of the automotive and other industries must have read with interest the statement of Col. Leonard Ayres in a recent issue of The Automotive Daily News. Col. Ayres flatly denies that there is evidence of overproduction by the automotive industry or that excessive accumulations of finished products exist.

This view of conditions is carried out by motor vehicle registration tabulations. The record breaking production totals have been paralleled by sales which, with the increased export quotas, are consuming the huge output of our motor vehicle factories.

Col. Ayres notes also that while it does not seem possible that automotive production can continue at its present level for much longer, it does seem almost certain that the year will surpass 1928, which is the present record holder.

It must be a constitutional pessimist who can see trouble ahead this year. High production might be a legitimate cause for worry if it were accompanied by excessive accumulations of stock, but when sales keep step with output, and both are high, we cannot see anything to call it except prosperity.

A Motor Theater

IT IS appropriate that Michigan, center of the vehicle branch of our industry, should have the first complete motorized theater to take the road. This venture is known as "The Detroit Players," and it carries on twenty-one Federal truck chassis a complete tent show, with all the paraphernalia of an up-to-date modern theater. The "theater" itself is a big tent seating 850 people, with an electrical equipment that would make many a static playhouse envious.

With such equipment The Detroit Players, under the direction of Adams T. Rice, are able to penetrate into sections that seldom enjoy theatrical performances. The result is a crowded house at almost every performance.

This idea has been successful enough to offer a suggestion for some bright young truck salesman in another territory.

They don't know your car—

in New York, believe it or not!

Most people in New York can identify only two makes of automobiles—the Ford and the Rolls-Royce.

Two-thirds of the people here are not car-owners. They don't use, talk or think automobiles as people do elsewhere. They don't know automobiles.

So the best job advertising can do for any automobile in New York is to get it public recognition; to make as many people as possible say to themselves or somebody else: "That's a Soandso. It's a swell car!" Prevalence, performance and the plaudits of the owners will do the rest.

The best way of doing this advertising job in New York is through The News. Its small pages carry your advertising message to seven-tenths of the families of New York City, one-fifth of the families in the New York suburbs at a lower cost. It is the most read medium in the least-automotived city in America!

THE NEWS
NEW YORK'S PICTURE NEWSPAPER
Tribune Tower, Chicago 25 PARK PLACE, NEW YORK

Fuel Distribution Features S. A. E. Session Papers

Mixture Distribution, Topic of Taylor Paper

By FAYETTE TAYLOR
Massachusetts Institute of Technology

MEASUREMENT of changes in the degree of fuel atomization and vaporization in an engine manifold might be made directly by some method of sampling the gases as they pass to each cylinder. It seemed more practicable, however, to evaluate such changes indirectly by measuring their effect on engine performance.

When the fuel mixture from the carburetor of a gasoline engine passes directly into the rapidly revolving rotor of a centrifugal supercharger, the particles of liquid fuel that are not yet evaporated probably are broken up into a very finely divided state much more quickly, and perhaps more completely, than would be the case in the conventional inlet manifold without the supercharger. This mechanical action, as distinct from the pressure and temperature rise due to compression, might be expected to result in the following changes in the condition of the fuel-air mixture:

(1) An increase in the quantity of fuel carried by the air stream and a decrease in the quantity adhering to the manifold walls.

(2) More rapid evaporation of the fuel, due to increase in the evaporating surface, and hence more complete evaporation during the time the mixture is passing from the carburetor to the cylinders. In the optimum case, evaporation would reach equilibrium conditions before the mixture enters the cylinder.

(3) A lower temperature and a somewhat greater density of the mixture entering the cylinder, because of the more complete evaporation of the fuel in the manifold.

(4) A more intimate and more uniform mixture of air and fuel entering the cylinder.

Influences that these changes might be expected to have on the performance of the engine may be classified as (a) effects resulting from improved uniformity of distribution in the manifold, primarily due to items (1) and (2), and (b) effects due to improved volumetric and combustion efficiency, due to items (3) and (4). In the usual gasoline engine the improvement in distribution undoubtedly would be the major influence on engine performance, since in most engines distribution is by no means perfect. The improvement in volumetric and combustion efficiency would in most cases be very small, even though the fuel were compeletly evaporated before entering the cylinder.

S. W. Sparrow has pointed out that if distribution in a multi-cylinder engine is faulty, fuel consumption is increased, power is decreased and there occurs a narrowing of the apparent limits of mixture ratio for satisfactory operation as compared with the case of uniform distribution. These effects are borne out by the experience of many engineers familiar with internal-combustion engine operation. Conversely, if faulty distribution is improved a gain in power and a decrease in fuel consumption should result. Consequently, changes in fuel distribution in an internal-combustion engine manifold can be detected by the resulting changes in engine power and fuel consumption, provided all other factors are held constant. Since this method is relatively easy to apply in practice, and results expressed in terms of engine performance are of primary interest, this method of attack was chosen for the present investigation.

Apparatus

The apparatus used for these tests included a Chrysler-70 six-cylinder automobile engine of 1926 model connected to a Sprague electric cradle dynomometer. All the usual arrangements for measuring temperatures, pressures, power, fuel consumption and so on were provided. in addition, a mercury manometer was provided for determining the depression in the inlet manifold, and an iron-constantan thermocouple was located in the manifold mixture stream near one of the cylinders to determine the temperature of the mixture at this point.

The engine was altered by removing the usual exhaust jacket from the intake manifold, since the presence of this jacket would obscure the results desired. The intake manifold was therefore entirely free from external heating devices. The supercharger used was built by the Green Engineering Company and was a high-speed centrifugal type fitted with a multiplying gear with a ratio of 7 to 1. The low-speed shaft of the multiplying gear was driven through a belt by an adjustable-speed electric motor.

The two carburetors were identical in design, and the length and shape of the passage between the carburetor and the intake manifold were made as nearly the same as possible in both cases, except for the presence of the blower. Gate valves were provided so that either system could be put into operation at will.

On account of the increase in temperature of the mixture when passed through the supercharger, some means of heating the intake air for the normal carburetor to secure the same condition had to be provided. A steam jacket surrounding the air intake and controllable by a valve in the steam line was installed for this purpose. Under normal operation the supercharger would give a higher pressure in the intake manifold than the norman carburetor, so that throttling to reduce the supercharger pressure was necessary in order that the inlet-manifold pressure should be the same in the two systems. This was accomplished by partially closing the throttle of the carburetor used with the supercharger.

Fuel measurements were made by a volume meter and stopwatch in the usual way. Two different fuels were used as will be explained later. These were commercial automobile gasoline and a mixture of the same gasoline with 50 per cent of commercial kerosene. Small quantities of ethyl fluid were added when necessary to suppress detonation.

Method of Procedure

The method of procedure chosen for these experiments was to make comparative runs with the supercharged carburetors at different speeds and loads. For each pair of comparative runs, engine conditions, including especially the temperature and pressure of the charge in the intake manifold, were held as nearly the same as possible. The independent variable in each run was the rate of fuel flow, which was changed by the carburetor needle valve from the leanest mixture with which the engine would run steadily to a mixture so rich that it was well above the point for maximum power, the speed of the engine being held constant during each set of runs by adjusting the dynamometer. With this method of procedure, the chief dependent variable was the brake load.

Runs were made with automobile gasoline at speeds of 1000, 1500, 2000 and 2500 r.p.m. at full, three-quarter and half load. The word "load" as used in this paper actually refers to a definite depression in the inlet manifold. "Full load" corresponds to the depression in the manifold obtained at full throttle with the unsupercharged arrangement. Three-quarters and half load refer to the manifold depression determined by the unsupercharged arrangement, with the throttle set to give three-quarters and one-half of the full-load power respectively with maximum-power mixture-ratio. For each set of comparative runs, the manifold depression was controlled by the throttle position.

Results

For each pair of comparative runs, curves were plotted showing the variation of brake horsepower and specific fuel consumption with vary rate of fuel flow. From these curves, plots were made of the maximum brake mean effective pressure, brake mean effective pressure at maximum economy and the corresponding specific - fuel consumptions at various speeds. The plot under full-load conditions showed a slight gain in power and reduction in fuel consumption at full load when the blower is used. At three-quarter and half load the difference between the two systems was entirely negligible, and the curves are therefore not reproduced.

The small differences obtained in the foregoing runs are believed to be due to the fact that the distribution without the blower was sufficiently good so that little improvement could be expected. If the distribution could arbitrarily be made poorer, a greater difference in performance as between the two systems might be discovered. Accordingly we decided to use a less volatile fuel, and a mixture of 50 per cent. of kerosene and 50 per cent. of gasoline was found to be satisfactory for this purpose. With this fuel mixture a set of comparative runs was attempted at full load at 1,000 and 1,500 r.p.m. using the two systems alternately. An interesting point is that at 1,000 r.p.m. the engine would not operate without the high-speed blower, even though the inlet-manifold mixture temperature was held at approximately 130 deg. Fahr. At 1,500 r. p. m. the curves show a marked improvement in favor of the supercharger system, both in power, fuel economy and mixture range.

All of the previous runs were made with a supercharger impeller speed of approximately 16,400 revolutions per minute. In an endeavor to determine whether or not a change in impeller speed would affect the results, a series of runs was made with different impeller speeds. During these runs the plain carburetor was not used and the heater was installed on the air intake of the supercharged carburetor, so that the mixture temperature could be held constant for this set of runs. The intake manifold pressure was also held constant, irrespective of blower speed, by proper adjustment of the carburetor throttle. A series of runs was made at full load, as determined by the engine power at lowest blower speed, at 1,000 revolutions per minute of the engine. These runs represent the difference in performance at various blower speeds when the temperature and pressure of the mixture in the intake manifold of the engine remain unchanged and should therefore indicate changes due to difference in uniformity of mixture. The results show that a definite improvement is obtained as the blower speed is increased, both in the mean effective pressure and in fuel economy.

A SERIES of interesting papers covering fuel mixture and distribution were presented at the Mixture-Distribution Conference of the summer meeting of the Society of Automotive Engineers at Saranac Inn yesterday. Some of these papers are presented in part on this page.

Best Presents Data on Fuel-Air Ratio Tests

By H. W. BEST
Sheffield Scientific School, Yale University

PROBABLY the best and most convenient method of obtaining the air-fuel ratios of automotive engines and studying the distribution to the individual cylinders is by analyzing the exhaust gases. Other methods, such as measuring the power delivered by individual cylinders, noting the color of the exhaust flame, and enriching or "leaning" the mixture until certain cylinders miss, are practical methods of observing distribution of a particular engine but are not sufficiently accurate for one who wishes to make a detailed study of the subject. However, a number of engineers do not like to use the analysis method because they feel that the results obtained, especially by rather inexperienced operators, are not sufficiently reliable.

We are conducting tests to determine how the air-fuel ratios obtained by analyzing the exhaust gases check with ratios obtained by measuring the air and fuel. We also want to determine how consistent the results are when the analyses are made by different men with varying degrees of experience.

The tests were run on a six-cylinder, 3½x5-inch engine. The air was measured by a Durley air box with a 2-inch flat plate orifice. As a check, a 1½-inch well rounded orifice was also used with the same results. The exhaust gases were analyzed in conventional Orsat apparatus having four absorption bottles, one containing potassium hydroxide for the CO_2, one containing pyrogallic acid for the O_2, and two containing cuprous chloride and ammonium chloride for the CO. The gasses were drawn directly into the Orsats through rubber tubing and a ⅛-inch nipple screwed into the exhaust line about 8 inches from the last cylinder.

Up to the present. 31 samples have been taken by different men; some with considerable experience in using Orsats, others with none at all. All of these tests were run at a constant air-fuel ratio; that is. the engine always run at about 1,300 r. p. m. with a wide-open throttle, and with the same carburetor setting which was that given maximum power. The air and fuel were measured every time a sample was taken.

Three methods of obtaining air-fuel ratios from the exhaust analyses were used and compared; (a) Dr. Watson's curve of the percentage of CO_2 plotted against air-fuel ratios; (b) a similar curve obtained by the Bureau of Mines, and (c) Prof. Lockwood's diagram using the percentages of CO_2, O_2 and CO. Dr. Watson's curve and that of the Bureau of Mines are the result of a large number of tests and analyses of the exhaust gases of multi-cylinder engines. Prof. Lockwood's diagram has been plotted from theoretical formulas, in which the hydrogen and methane were elimated by the approximate relations $H_2 = 0.38$ CO and $CH_4 = 0.13$ CO.

By direct measurement the average ratio was 11.9 pounds of air per pound of fuel. The average air-fuel ratio obtained from the thirty-one samples using Dr. Watson's curve was 11.6; using the Bureau of Mines curve it was 12.3. For the rich mixtures the Bureau of Mines' curve for a given percentage of CO_2 gives a slightly higher air-fuel ratio than does Dr. Watson's curve. This may be due to the different fuel used. The highest value obtained from any one of the analyses using the Bureau of Mines' curve was 13.0 and the lowest 11.5. Most fairly close to the average.
of the other individual values came

In using Prof. Lockwood's diagram the air-fuel ratio can be obtained from any two of the three constituents, CO_2, O_2 and CO. If all three are used, three points will be obtained on the diagram which, if the analysis is correct, will be close together or coincide, thus giving a check on the analysis.

In using these diagrams we used the three constituents, CO_2, O_2 and CO, and took a point in the center of the triangle formed by the three values to get the air-fuel ratio. The first 19 analyses gave rather high ratios, the average being 13.2, compared to 11.9 obtained by direct measurement. This was due to the fact that these 19 samples all have a very high O_2 content, 1.5 to 2.0 per cent. This large O_2 percentage did not seem to affect the percentage of CO_2 and therefore did not affect the air-fuel ratios obtained by using CO_2 curves. The last twelve samples all showed a low O_2 content, under 0.5 per cent. The average air-fuel ratio of these samples from Prof. Lockwood's diagram was 12.6. We have not yet determined just why we got such high O_2 readings for the first nineteen samples, but I suspect it was due to a slight leak, and probably the samples were not drawn into the Orsats under pressure. If the samples are kept under pressure while being taken into the Orsat, I do not believe that the analyses would be affected by a small leak. Possibly one or more of the cylinders was not firing regulairy and was exhausting some uncombined mixture.

A curve similar to Dr. Watson's and that of the Bureau of Mines can be obtained from Prof. Lockwood's diagram by assuming a O percentage of O_2 for rich mixtures and the same carbon monoxide value for lean mixtures. This curve for rich mixtures is practically the same as Dr. Watson's.

Samples were also taken from the individual cylinders through ⅛-inch nipples screwed into the exhaust branches from each cylinder about 1¾ inches from the block. The ends of the nipples were perforated and extended into the exhaust pipes about 1½ inches and the gas was drawn directly into the Orsats through rubber tubing attached to the nipples. The samples were purposely not taken from a point closer to the valves because some of the burning of the mixture probably takes place as it passes over the exhaust valve, and if the sample is taken too close to it it is more apt to be only partially burned. The average results of these tests are given in Table 1, together with the average of the thirty-one samples taken from the exhaust pipe.

These experiments have not yet been completed, therefore no definite conclusions can be drawn. We expect to run further tests to determine the cause of some of the high O. percentages, the effect of taking the samples from different places in the exhaust line, and also to use varying air-fuel ratios, both on the six-cylinder and a single-cylinder engine.

MARKS DESCRIBES FRANKLIN SYSTEM OF FUEL DISTRIBUTION

By E. S. MARKS
H. H. Franklin Mfg. Co.

IN ANY discussion of mixture distribution we thought it might be of interest to show a recent change we have made in our manifolding on the standard Franklin car as a result of experimental work. An analysis of the exhaust gas by means of the Orsat apparatus has always shown this new type of manifold to distribute the charge to the various cylinders in even proportions. Thermocouples, which are also a very excellent means of checking up on distribution, have always checked the findings of the Orsat apparatus. This manifold has a number of sharp turns, which have a tendency to break up the charge.

This new design has the same good distribution qualities as the old old design has and at the same time a lower restriction due to the easier turns for the gas flow after the gas has left the runner. The use of a square section runner, however, together with the abrupt turns in the end, continues to keep the mixture well broken up. It is the lower restriction after leaving the runner which has resulted in increased output.

By placing the runner of the manifold further away from the engine the gas flow has a chance to straighten out before flowing into either branch of the Siamese. The increased power developed by this new manifold as compared with the old one ranges from 2.5 per cent. at 1,000 revolutions per minute to 26.3 per cent. at 3,400 revolutions per minute. This manifold, in combination with new developments in carburetion, has given us a decrease in gasoline consumption of from 2.1 miles per gallon at twenty miles per hour to .25 mile per gallon at sixty miles per hour.

Experiments carried on in our laboratory in such a way as to watch the charge going from the manifold into each cylinder indicates that a dry charge is obtained very quickly and at the same time the density of the mixture, as it appears in the transparent runners, is very unjform for all cylinders. We have never been able to obtain these same results with any type of round section manifolding.

BORG-WARNER EARNS $1,851,993 IN QUARTER

New York, June 27.—Borg-Warner Corporation and constituent companies, makers of carburetors, transmissions, etc., for quarter ended March 31, 1929, shows net income of $1,851,993 after interest, depreciation and Federal taxes, equivalent after allowing for dividend requirements on 7 per cent. preferred stock, to $3 a share (par $10) earned on 596,906 shares of common stock.

Consolidated income account for quarter ended March 31, 1929, follows: Operating profit after expenses, $2,218,129; income, $141,902; total income, $2,360,031; interest, $24,155; depreciation, $226,481; Federal taxes, $257,402; net income, $1,851,993.

Akron, O., June 27.—F. R. Harpham has been elected a vice-president of the Goodyear Tire and Rubber Company, succeeding C. M. Stone, resigned.

Table 1—Average Analyses of Exhaust Gas Samples

Cylinder No.	1	2	3	4	5	6	Exhaust Pipe
CO_2	10.9	11.0	8.5	11.2	9.1	10.6	10.2
O_2	0.5	1.3	6.1	0.3	2.5	0.6	1.6
CO	4.4	4.5	4.5	4.5	5.0	4.8	5.1
Air-Fuel Ratio							
Measured	11.9	11.9	11.9	11.9	11.9	11.9	11.9
Bureau of Mines	12.8	12.9	11.3	13.0	11.7	12.6	12.6
Lockwood	12.9	13.3	16.6	13.0	13.8	12.8	13.1
Watson	12.2	12.2	10.5	12.3	10.8	11.9	11.6
Samples Averaged	7	4	7	3	5	9	31

Long Distance Buses Topic at Transportation Session

A THOROUGH paper on long distance bus transportation presented by R. E. Plimpton was the feature of the Transportation Conference session of the Society of Automotive Engineers' Summer Meeting at Saranac Inn, N. Y., yesterday. This paper is presented in part herewith.

Plimpton Discusses Long Haul Bus Transportation

By R. E. PLIMPTON

ONE of the simplest forms of transportation service is a ride in an automobile. This was true at least at the beginning of bus transportation. John Smith could, and did, serve as owner, driver, mechanic and, perhaps, accountant. But when his one-man one-vehicle system had taken unto itself scores or hundreds of passenger-carrying units, and the few miles of route confined to a city or its suburbs had been extended to cover hundreds of miles in many states, management became enmeshed in all the complexities of large-scale business, with a few distinctive ones thrown in for good measure.

In other lines of indutsry it usually is admitted that production has outstripped distribution and that the factory is doing a better job than the sales department. The reverse is more nearly true in the case of long-distance motor coach operation. Of necesity, because of the competitive nature of the service, the selling or traffic department has been more highly developed. All the resources of modern distribution are skillfully employed. The product, or ride, is sold at many and widely scattered points. Advertising is persistent and continuous, on the revenue vehicles and by attractively printed matter, including booklets, timetables and newspaper announcements.

But the operation and maintenance of the motor carriers, corresponding to production in the factory, is a comparatively new problem. Until three or four years ago, routes rarely exceeded 100 miles in length. If a number of them were brought together under a single control, they usually radiated from one or more city centers where the maintenance of the vehicles could be concentrated and the drivers were under daily supervision.

Decentralization Needed

Maintenance and operation must be decentralized on the routes of 500 miles or more, such as are characteristic of the long-distance movement of passengers. So far this decentralizing has been done in a more or less hit or miss manner, but as larger companies enter the field order is succeeding the former chaos. Standardization based upon thorough research is gradually being effected in methods of maintenance and operation; the accident hazard is receiving expert attention; equipment is being improved as fast as is warranted by the condition of highways and the traffic demand; and maintenance facilities are being established at points on the long routes, providing not only needed mechanical labor but a supply of spare parts and reserve vehicles.

This progress is being made mainly in the type of long-distance services that connect one large center of population with another of comparable size. The highways permit all-weather operation. Equipment is of large capacity, single-deck coaches seating twenty-five to thirty or even more passengers. This type of service corresponds to that of the trunk lines of a steam railroad, as shown on the map in Figure 3 by routes of the Motor Transit Corporation and its affiliated companies. It will be noted that the routes are densest in the northeastern states and on the Pacific Coast, both sections in which population density and highway conditions have been unusually favorable.

Another kind of long-distance service is more likely to be intrastate in character and provides in many cases the only public transportation from trading centers to smaller towns and villages. This development is still largely in the pioneer stage; operating companies are small, roads are poor and frequently passable only during part of the year; vehicles may be of the seven-passenger automobile type or at most do not seat more than eighteen or twenty persons. Thus this second type serves the less densely populated parts of the country, being found mostly in the agricultural states west of the Mississippi River.

The map also indicates, in heavy lines, the location of routes of 100 miles or more, outside of the Motor Transit System. Not all of these are of the light-traffic variety, as in about twenty states companies operating fifty or more vehicles are engaged in long-distance work. These routes connect with those of smaller operators (see fig. 4), to serve outlying territories.

700 Long-Distance Routes

All told, about 700 of these 100-mile routes are being operated now over 100,000 miles of highway, as compared with the 260,000 miles of intercity routes reported in the 1929 statistical issue of Bus Transportation. Of these, the group included in the Greyhound-Pickwick-Yellow-Oregon Stages System has about sixty long lines on 22,000 miles of highway. The members of this group operate about 6,000 miles of shorter routes, mostly of the branch-line variety feeding into the main or trunk routes.

The leading state in long-distance routes is Texas, which has about eighty routes on 12,000 miles of highway. California is second, with thirty routes on 6,000 miles of highway; followed by Oklahoma and Washington in the West, and Illinois and Ohio in the East. These last four states have from twenty to thirty routes each, aggregating 4,000 to 5,000 miles.

To assume 100 miles as the distance required before a route attains "long-distance" standing is rather arbitrary, although such routes have many features that differentiate them from the shorter suburban runs. Baggage facilities must be provided on the vehicles; comfort and meal stops are required; and on the best managed of these routes railroad practice is followed in the selling of tickets, so that the driver collects cash fares only when he takes on passengers at intermediate points.

While all of these features are important, the service lacks one of the most striking characteristics of routes that are several hundred miles long; that is, the fact that most of the passengers complete their trips only after an all-day and all-night ride. On these long routes, service is afforded continuously twenty-four hours per day and seven days per week, and passengers avail themselves of it to a great extent. Trips of 1,000 miles or more from Denver to Los Angeles, Chicago to Jacksonville, and Vancouver to Salt Lake City are made by many passengers without any overnight stops.

Operation Stages or Divisions

Long runs of this kind must be broken down into small, and, therefore, more easily workable, elements. The process of division starts with the ticket, which entitles the passenger to a seat between specified points. Town-to-town coupons are detached from the ticket from time to time, so that each part of the system can receive financial credit for the work actually done. One vehicle and one driver travel only a limited distance, as a practical operating measure. Any long trip by a passenger means changing both vehicle and driver, but not necessarily at the same time. Another and equally essential aspect of operation by stages, using the word not in its meaning of a vehicle, but in the older sense as a stopping place on a route of travel, has to do with the accommodation of passengers. Their comfort and convenience demand stops at fairly regular intervals, waiting rooms with suitable facilities, a time and place to eat. All of these are ordinarily provided apart from the medium of transportation, and thus increase the running time between points.

The "stage" problem is not peculiar to motor coach transportation; it was solved with the stage coach of earlier days, when the horses had to be changed every eight or ten miles and drivers at somewhat longer intervals. The railroad has division points at which one train crew relieves another and one locomotive is taken off for inspection or light repairs and another that is in good condition is substituted. Air-transport companies find it essential to replace planes and pilots after they have flown a certain number of hours. One such company has set 450 miles as the pilot's stint, while a single airplane makes twice that distance.

On the highway a run of 200 miles is easily accomplished by one driver and one coach. Both can travel back and forth over the route, out one day and back the next, working perhaps eight or nine hours per day. Facilities for supervision and maintenance can be concentrated at one end of the route. Any work required at the other end can be done by a local garage. With automobile mechanics everywhere in the land, emergency repairs of a minor nature can be made at intermediate points between terminals. Fuel is purchased at local filling stations. But the operating company aims to handle all work, as far as possible, at its headquarters.

Schedules Based on Careful Study

Schedule-making with the better organized companies is becoming a matter of detailed and painstaking study. The first step taken on the Motor Transit-Greyhound lines is to measure the length of routes accurately. Highway distances given by the published maps or route strips were found to be inadequate, possibly because of the special course the motor coaches follow through cities and towns. So, to find the exact mileage, each route is carefully logged by a Greyhound traffic-department automobile. This is fitted with a hub odometer on each front wheel. Readings of the two are averaged to ascertain the station-to-station distances, as well as those in the open country and between county, city or town limits. The log shows where the type of highway changes, as the rate of speed allowed for varies with paved, gravel or dirt surfaces. A note is made of curves, sharp turns and railroad tracks, and of the traffic conditions in various cities and at different hours of the day.

With exact distances and road conditions known, the next step is to work out running times between stations. Average speeds are based on local regulations, size of towns and whether the towns have signal lights to control traffic. Good roads in open country may mean a speed of 40 m.p.h., this being reduced to 30 m.p.h. in small hamlets, 25 m.p.h. in towns having traffic signals, and to still less in congested cities.

Fares Vary With Conditions

Typical fares charged by the long-distance lines are shown in Table 1 and in the chart, Fig. 12. Like the statement in a prospectus, these fares "are not guaranteed but are based upon information which we believe to be accurate and reliable." The wide variation demonstrates the effect of interstate and railroad competition, poor roads and differences in the volume of passenger traffic. Compare, for example, the 7.15 cents per mile charged between Ely and Tonopah, Nev., on route 41 having a tri-weekly service and the figures for Routes 2, 14, 27, 37, 46 and 50. The latter are sufficient proof of the low rates on long-distance interstate routes. Most of the rates average about 2¼ cents per mile. The effect of severe competition between passenger carriers, rail and road, is shown in the 1.8 cents rate between Portland, Ore., and San Francisco. Even this is higher than rates set at times by individuals or small companies operating between such centers as Chicago and St. Louis or Chicago and Detroit. In the winter, when business drops off, the fare per mile has been cut to as low as $3 for the 321-mile ride, or less than 1 cent per mile. This and even lower rates are made only temporarily. The equipment and the service are much poorer than that of the companies collecting $5 for the trip.

Contrary to the uniform 3.6 cents per mile required for steam railroads unit motor coach fares tend to decrease with the distance traveled, although not according to any set formula. Fig. 13 represents three long-distance tariffs or fare bases. The highest starts with 3.6 cents per mile and drops to 2 cents after 400 miles. This has been suggested as desirable by the head of a large Texas company, which actually is getting about 3 cents per mile for runs of about 100 miles and 2.84 cents for those of 500 or 600 miles. The middle curves of the two groups are based upon a Yelloway tariff between Needles, Cal., and Albuquerque, N. M. From Minnesota come the lowest fares, based upon 3 cents for the first 100 miles and 2 cents per mile thereafter.

Distance alone cannot be taken as a guide in setting fares; volume of business over a given route must also be considered. On most main lines local or suburban services of the operating company parallel the long-distance routes, and income from the two types of service helps to pay the total operating expenses. In principle each run should take in its direct costs and a reasonable proportion of all other expenses. The suburban routes probably are a necessary evil if they follow the main lines, although common facilities can be used at minimum expense. But if they are of the branch or stub-route variety and the revenue is low, joint ownership or management may be economically inadvisable. Suburban services should have a different type of equipment than is needed for the long routes. Revenue may go from bad to worse if, as sometimes happens, the short runs are used to get the last ounce of work from coaches that are obsolete for main-line service. Even though use of old equipment is justified by the small revenue, the public resents having to ride in old vehicles if better ones are operated in the neighborhood by the same company. A small operator, however, can often maintain the lower standard and has the additional advantage of much lower overhead expense. Hence many large companies prefer to have the short branch routes operated by others. The large and small lines may well use the same passenger terminals, where connections can be made. Interline tickets can be sold if the small operator goes so far as to use tickets at all.

THIS TABLE, BROUGHT UP TO DATE, RUNS EVERY FRIDAY IN THE AUTOMOTIVE DAILY NEWS

SECOND REVISION, MAY, 1929, NEW COMMERCIAL CAR REGISTRATIONS

Figures in this table are from R. L. Polk & Co. of Detroit, with the exception of Illinois, which are supplied by the Robinson Advertising Service, Springfield, Ill., and New Jersey, which are furnished by the New Jersey Motor List Co., New Car Division, Trenton, N. J. Readers desiring county, city or town lists, or lists of owners in any given section, may obtain these by addressing any of these three companies.

Commercial Car Registrations do not include buses.

States	Autocar	Brockway Indiana	Chevrolet	Diamond-T	Dodge	Fargo	Federal	Ford	G. M. C.	International	Mack	Pierce-Arrow	Relay	Reo	Republic	Rugby	Sterling	Stewart	Studebaker	Whippet	White	Willys-Knight	Miscellaneous	Totals	States
Arkansas		4	193	1	22	1	2	317	5	46				12					2	1	4	1	1	612	Ark.
Delaware	2		48		12			80	12	14		1		7	1					2		1		180	Del.
Florida		4	148		13	1		357	2	14	1			6						3	3			552	Fla.
Illinois	6	13	784	88	121	6	15	1077	52	200	32	3		49	1		5	2		13	19		116	2602	Ill.
Kansas		4	408	1	60	5		462	19	98				20	2	1			1	6	5	1	10	1103	Kan.
Maryland	19	7	233	16	49	2	8	295	34	52	24	2		21	1	1	11	5	2	3	18	1	6	810	Md.
Minnesota			508	3	53	2	8	689	24	108	2		1	37		1			2	10	6	3	2	1459	Minn.
Missouri	4	22	426	19	72	8	12	566	36	69	17	5		29		4	3	1	4	14	8	3	5	1347	Mo.
Montana			99		18	1	1	196	12	34	3		2	10		2				6	4	1	2	391	Mont.
New Jersey	25	17	440	5	79	9	14	565	48	46	46	1	3	56	2	5	10	7	12	9	25	6	58	1488	N. J.
N. Carolina		2	306		40	2	3	285	16	16	4			7		3		2	2		7		4	699	N. C.
N. Dakota			155	1	20			156	13	101		1	1	9		4				5		2	2	470	N. D.
Rh. Island	6	2	94		30	8	15	96	26	7	11	1		23			6	3	2	2	3		4	339	R. I.
S. Carolina			203		18	2	9	253	3	11	1			2	1						3		1	507	S. C.
S. Dakota			131	1	18	4		137	10	84				18		3			2	1		1	2	412	S. D.
Utah			52		8	1		86	1	5	1			6		4					2		2	168	Utah
W. Virginia	1	5	208	4	42		2	226	11	50			4	21	1	1		2	2		6	3		589	W. Va.
Wisconsin		1	627	36	84	8	15	1047	48	161	8	1	3	58	1	7	16	8	8	29	14	4	32	2216	Wis.
Dist. of Col.	1	5	61	6	15		2	138	9	4	11	1	3	6			2	10		2	6			282	D. C.
Totals	64	86	5124	181	774	60	106	7048	381	1120	161	16	17	397	10	36	53	40	39	104	135	26	248	16226	Totals

Financial News of the Automotive Industry

RANGE OF AUTOMOTIVE STOCKS

NEW YORK STOCK EXCHANGE

WEDNESDAY, JUNE 26, 1929

Previous 1929 High	Previous 1929 Low	Div.		Sales	High	Low	Close	Net Change
104⅜	27	....	Advance Rumely	300	39	38½	39	+ 1
119	40⅛	....	do pf	200	60	60	60	....
153⅜	95⅛	3	Air Reduction	3,900	151⅞	148	148⅜	— 1⅝
11¼	4½	....	Ajax Rubber	600	5⅞	5⅝	5⅝	....
254½	166	7	Allis Chalmers	3,000	268	259½	265	+ 1
....	....	....	do pf		No sales today			
73¾	40½	....	Am. Bosch Magneto.	2,500	59⅜	58¼	58⅛	— ⅜
335¾	221	4	Auburn Auto	3,400	345	337	337	+ 1¼
....	....	....	Am.-La France		No sales today			
136¾	110⅛	3	Bohn Aluminum	2,700	125	122⅞	122⅞	+ ⅞
63⅛	30¼	....	Briggs Mfg. Co.....	2,400	35	34⅛	34⅛	— ⅞
73½	42½	3	Brockway Motor	1,800	51⅛	50⅛	50⅛	— 1
39⅞	28¼	....	Chicago Pneu. Tool.	5,100	36⅝	34½	35⅞	+ 1⅜
....	....	....	Chicago Yellow Cab.		No sales today			
135	66	3	Chrysler Corp.	12,700	75⅝	74⅛	74⅛	— 1
....	....	....	do pf		No sales today			
62⅝	43	2	Commercial Credit..	15,300	50⅞	49⅜	50½	+ ⅛
....	....	....	do pf		No sales today			
195	131½	4	Com. Invest. Trust...	1,600	164½	161¼	163⅞	— 1⅛
....	....	....	do pf		No sales today			
28⅝	17	.80	Continental Motors..	31,700	17⅜	15⅝	15⅞	— 1¼
65¾	58⅛	3.50	Cutler-Hammer	2,100	67	64	64	— ⅛
198½	155¾	6	Du Pont	19,300	187	181	181	— ½
76⅞	56	3	Eaton Axle & Spring	2,100	63½	62	63½	+ 2
172	126¾	6	Electric Auto-Lite ..	26,300	168	165	166	— ½
92⅜	77	5	Elec. Stor. Battery...	31,000	85¼	83½	84⅞	+ 1⅛
73⅝	55	2.50	Evans Auto Load....	800	61¼	60¼	61¼	+ ¾
....	....	....	Emerson Brant		No sales today			
....	....	....	do pf		No sales today			
22⅜	13¾	.80	Federal Motors	3,900	15⅞	14½	15¾	+ 1⅜
20⅛	7⅝	....	Fisk Rubber	2,600	9⅛	8⅞	9	— ⅛
....	....	....	do 1st pf.....		No sales today			
33⅜	20	....	Gabriel Snubber	3,600	27	25⅞	26⅞	+ ⅞
311	219	4	General Electric	44,000	317⅝	310	313¼	+ 4¼
25	10½	....	Gardner Motor	1,000	14	13½	13⅞	+ ⅜
91¾	68⅝	3	General Motors	90,700	75⅞	74¼	74⅝	— ¼
....	....	....	do pf		No sales today			
126½	122½	7	do 7s pf.....	100	123¼	123¼	123¼	— ⅛
....	....	....	do deb		No sales today			
58¼	36⅞	1.50	Glidden Co.	18,900	60⅛	56½	59½	+ 3
106⅛	101⅛	7	do pf	10	103	102⅞	103	....
105⅝	73	4	Goodrich	4,800	81⅞	80⅛	80½	+ ⅛
115⅛	111	7	do pf	100	112	112	112	— 1
154½	112	5	Goodyear T. & R....	8,600	126½	124	124	— 1⅛
104⅝	101	7	do pf	200	101½	101¼	101¼	....
54	25	....	Graham-Paige Motor	7,200	32⅜	31½	31½	— ⅝
68⅝	37⅜	8	Hayes Body	900	41	40½	40½	— ⅝
93½	75⅛	5	Hudson Motor Car...	40,900	89½	86	88⅞	+ 3⅞
82	39½	2	Hupp Motor Car....	3,500	49½	48⅛	48¼	+ ⅛
32½	17¾	....	Indian Motocycle ...	1,100	23	22½	22⅞	....
....	....	....	Intercon. Rubber....		No sales today			
119¾	92	2.50	Internat. Harvester..	3,500	107⅞	106	106	— ⅝
145	140	7	do pf	100	140	140	140	....
123	119	7	Johns-Manville	16,900	121	121	121	— 1
16½	6	....	Jordan Motor Car...	1,400	7¼	6⅞	6⅞	— ⅜
24	11	....	Kelly-Springfield ...	1,500	16¼	15⅞	15⅞	— ⅜
....	....	....	do 6s pf.....		No sales today			
....	....	....	do 8s pf.....		No sales today			
59¾	40¼	2	Kelsey-Hayes Wheel.	2,200	50⅝	50	50⅛	....
....	....	....	do pf		No sales today			
25	10	....	Lee Rubber & Tire..	100	14⅜	14⅜	14⅜	— ¼
....	....	....	Link Belt		No sales today			
114¾	91	6	Mack Trucks	3,300	99⅞	97	98⅞	+ 1⅜
104	66¾	4	Marmon	3,100	89⅞	86⅛	86⅝	— 3⅜
89⅞	69⅛	2	Marlin Rockwell	100	81	81	81	+ ⅜
....	....	....	Martin Parry		No sales today			
34⅜	20	....	Mengel	1,900	26¾	25¾	26½	+ ⅜
28⅜	18⅜	....	Miller Rubber	500	18⅜	18	18	— ⅜
8	4	....	Moon Motors	1,300	4⅛	4	4	— ⅛
19	16½	....	Moto Meter A.....	300	18	17¾	17¾	....
206	96½	2	Motor Products	1,500	128⅜	120	126⅜	+ 8¾
48⅜	39	2	Motor Wheel Corp...	800	45⅛	44¼	44¼	— 1
81⅞	42¼	....	Mullins Mfg.	1,300	47¼	46¼	47⅛	+ 1⅛
100⅛	62	3	Murray Corp.	3,500	93½	92½	93	— ⅝
118⅜	81⅛	6	Nash Motors	4,400	85⅝	84⅝	84⅝	— ⅜
....	....	....	Norwalk T. & R.....		No sales today			
....	....	....	do pf		No sales today			
....	....	....	Omnibus Corp.		No sales today			
48⅜	37	....	Otis Steel	13,300	45⅝	43⅝	44½	+ ⅛
153¾	116½	3	Packard Motor Car.	6,200	133¼	131⅝	132	— 1
22½	11⅝	....	Peerless Motor Car..	700	12⅝	11⅛	11⅝	— 1
37⅞	27½	....	Pierce-Arrow	900	31⅞	31½	31½	— ⅜
....	....	....	do pf		No sales today			
31⅞	22¼	.80	Reo Motors	1,400	23½	23	23	— ⅜
12¼	6	....	Reynolds Spring	800	7⅜	7⅛	7⅜	+ ⅛
66¾	45	....	Spicer Mfg. Co.....	1,400	54⅝	50½	53⅝	+ 2⅝
55⅞	46¼	3	do pf	200	47	46⅝	46⅝	+ ⅛
77	65	3.50	Stewart-Warner Spd.	6,400	75⅛	74	74⅛	— ⅜
....	....	....	Stromberg Carbur...		No sales today			
98	73⅛	5	Studebaker Co.	2,100	80	78	78⅛	— ⅜
31	21⅜	.80	Timken Det. Axle...	900	25⅝	25⅛	25⅛	— ⅛
101¾	73½	3	Timken Roller Bear.	24,400	108	101⅝	107	+ 6
59⅜	38⅜	2.50	Trico	500	56½	55⅝	55⅝	— ⅛
65	42	....	U. S. Rubber.....	2,800	52⅜	52⅛	52⅝	....
92½	73	....	do 1st pf.....	3,100	82	77	81	+ 2½
42⅜	28½	2	Warner Quinlan	800	31½	31½	31½	+ ⅜
54½	43¼	2	Westinghouse A. B..	2,100	48	47⅛	48	— ⅜
53½	38	1	White Motors	100	42	42	42	— ⅛
35	21	.20	Willys-Overland	7,900	23	22¼	23	+ ⅜
103	92	7	do pf	200	94	92⅝	92⅝	+ ⅛
73½	61¾	4	Yale & Towne.....	100	72½	72½	72½	....
51¼	34⅜	....	Yellow Tr. & Coach.	3,200	41⅞	40⅜	41	— ⅜

NEW YORK CURB MARKET

Sales		High	Low	Close	Net Chge
	Bendix Aviation	No sales today			
	Borg Warner...	No sales today			
1200	Briggs & Strat.	35⅝	35⅛	35⅜	— ⅛
4300	Budd Ed	21¾	17¾	20⅞	+ 3½
	Bullard Co	No sales today			
300	Caterpillar T...	82	81	82	+ 1½
14100	Checker Cab ...	63⅞	60	63⅞	+ ⅞
14500	Cities Service...	32	31⅜	31⅞	+ ⅛
600	do pf	96½	96¼	96¼	....
500	Con Di Fibre...	35⅝	35⅝	35⅝	— ⅜
500	Doehler D C...	31⅝	31	31⅜	— ⅛
1100	Durant Motor..	13½	13	13½	+ ⅛
200	Fageol Motor...	4⅝	4⅜	4⅝	+ ⅛
400	Fedders	31¾	31	31¼	- ⅜
	Federal Mogul..	No sales today			
5200	Fint	28⅞	28½	28⅞	- ⅜
	Firestone	No sales today			
	do pf	No sales today			
100	Ford Can	46⅝	46	46	— ⅛
4100	Ford Ltd	15⅝	15¼	15½	....
	Franklin Mfg ..	No sales today			
	Gen T & Rub..	No sales today			
	Gr'nfield T & D	No sales today			
	Hall Lamp ...	No sales today			
	Hennev	No sales today			
	Hood Rubber...	No sales today			
	India Tire	No sales today			
	Indita Fras	No sales today			
	Jaeger	No sales today			
500	Lakey	26⅞	25⅞	25⅞	— ⅛
	Marvel Carb....	No sales today			
	McQuay Norris..	No sales today			
200	Mat Rub Mach..	34½	34⅛	34⅛	— ⅛
200	Paramount Cab.	16	15⅝	15⅝	- ⅛
600	Perfect Circle...	63⅛	60⅝	62¼	- 1¼
	Pines Winter...	No sales today			
	Pitt Pl Glass...	No sales today			
1000	Raybestos	90	87	88	— 3⅛
	Rep M T ctfs..	No sales today			
	Rolls Royce Am	No sales today			
	Ross Gear	No sales today			
100	Safe T Stat....	30	30	30	—1
	Seiberling	No sales today			
4600	Serv-el Inc	18⅜	17¾	18¼	⅛
	Sparks With ...	No sales today			
100	Stutz Motor ...	13⅞	13	13⅞	⅞
	Thermoid Co ..	No sales today			
900	Thompson Prod.	60⅞	59¼	59½	1¼
	Triplex	No sales today			
	U S Asbestos...	No sales today			
300	Watson, J W...	5½	5½	5½	....
500	Wayne Pump ..	19	18½	18½	— ⅛
700	West Auto	73	71⅝	72	⅛
	Wire Wheel	No sales today			
	Yellow Taxi N Y	No sales today			

NEW YORK OVER THE COUNTER

Div.		Bid	Asked
6	Am Hard Rubber.....	82	85
10	Dixon (J) Crut.....	167	171
3.50	Doehler D C pf.....	36	42
5.25	do 7½% pf.....	100	107
....	Eisemann Magn.....	34	38
7	do pf	96	100
3.50	Manhattan Rubber	43	52
....	Rolls Royce Am.....	20	24
....	do pf	50	55
1.20	Smith (A O).....	190	195
....	Splitdorf Beth E.....	9	10
2	Ward La Fr Tr Co A....	32	33

CHICAGO STOCK EXCHANGE

Sales		High	Low	Last
200	Acme Steel	105	103	105
3150	Allied Motor	46	43½	45½
150	do pf	51	50	51
7700	Allied Products	71⅞	69	71⅛
1300	Auburn Auto	345	340	342
5200	Bendix Aviation	88	86¾	87¼
18650	Borg Warner.....	121½	116	119¼
350	Brown Mfg Co.....	52	52	52
400	Chicago Yellow Cab	30	29½	29½
250	Gen Spring Bump A	48	47½	47⅝
656	do B	48	47	47⅛
100	do A ctfs.....	47¾	47¾	47¾
1080	do B ctfs.....	48	47½	47½
1150	Houdaille Hersh A.	49	48	48½
580	do B	49	48½	49
50	Midland Steel	95	95	95
150	Modine Co	68	67½	67½
450	Muncie Gear A....	19	18¼	19
300	Muskegon Motor A	27	26¼	26½
100	Nachmanns	60½	60½	60½
100	Noblit Sparks	43½	43½	43½
3200	Perfect Circle	62¾	60½	62
1520	Pines W F	68	65¾	66
200	Van Sicklen A.....	30	29	30
50	Waukegon Motor ..	175	175	175
50	Wayne Pump	18½	18½	18½
100	do pf	36½	36½	36½

CLEVELAND STOCK EXCHANGE

Sales		High	Low	Last
300	Apex Elec	32¾	32	32¾
4	Firestone 6s pf....	109	109	109
250	Glidden pr pf.....	103	103	103
15	Jordan Motor pf....	50	50	50
30	Miller Rubber pf...	63	62	63
10	Mohawk Rubber	45	45	45
10	Seiberling Rubber...	40	40	40
5	Thompson Products.	60	60	60

DETROIT STOCK EXCHANGE

Sales		High	Low	Last
3738	Brown Mfg Co.....	53	50	52
100	Detroit Motor B....	7	7	7
100	Federal Mogul.....	23½	23½	23½
1100	Federal Screw.....	72¾	71	72
549	Ford Canada A.....	46¾	45	46¼
300	Frost Gear	22	22	22
1000	Federal Mot Truck	15¾	15	15½
436	Gen Spring Bump A	47¾	47	47½
1047	do B	47⅞	47	47⅞
500	Grand R M	14	13¾	13⅞
100	Graham Paige.....	32	32	32
600	Hall Lamp	22¾	22¼	22¾
1165	Houdaille Hersh B..	49¼	48	48
110	Hutto Engr	28	28	28
100	Michigan Steel	106	106	106
4575	Muskegon P R.....	49½	46	49½
1065	Packard new	27½	27	27
2800	Universal Products.	40¾	40¾	40¾

The A. D. N. Analyst Looks Them Over

EXPANSION in plant, production and earnings has marked the progress of the Federal Mogul Corporation within the past year. The company began the year with earnings running at a rate three times dividend requirements.

Although the effects of the plant expansion were not felt in 1928, the company was able to push production with the old facilities to a point that yielded a per share profit on the common stock of $3.50, compared with $1 in the preceding year. Since this increased earning record promised to hold in the future, the company paid an initial dividend of 30 cents a share on the common stock in January, and made an extra payment of 15 cents a share early this month.

Earnings in the first quarter of this year amounted to $131,323, equal to $1.01 a share on 130,000 shares of common stock outstanding. The income account for the quarter was accompanied with a report that current inventories were low and were being turned over at the rate of ten times a year, against an average of five times in this line of business.

An addition to the No. 1 plant of the company in Detroit was started last November and completed this spring, but it had no more than been occupied when it was necessary to start still another addition, which will be ready soon.

The Federal Mogul Corporation was incorporated in 1924 under the laws of Michigan, as a merger of the Muzzy Lyon Company and the Federal Bearing and Bushing Corporation.

Products of the corporation include bronze-black babbitt-lined bearings, bronze washers, babbitt metals, die cast babbitt bearings and bushings, bronze castings, bronze bars, covered and solid, and bronze bushings. The company has around 1,000 customers, for which it makes replacement bearings for practically all standard engines built. It also sells to car distributors, service stations and repair shops a re-babbatting and boring machine. The company has developed a good foreign business.

The capital stock of the company consists of 150,000 shares of no par common stock authorized, with 130,000 outstanding. The entire issue of preferred stock, 8 per cent., was called on December 1, 1923, at $105 a share. Forty thousand shares of the company's common stock were offered last September at $20 a share, after which it was listed on the Detroit Stock Exchange and the New York Curb Market.

Total net income of the company in 1928 set a new high record at $455,962, or nearly three and one-half times the $130,207 earned in the preceding year. Although net income has been somewhat irregular since 1925, net sales have shown a consistent increase and the condition of the company generally has shown great improvement.

Net sales of Federal Mogul amounted to $3,933,446 in 1927, as compared with $3,814,570 in 1926 and $3,693,411 in 1925. The net income in 1926 amounted to $359,748 and that of 1925 was $370,264.

The financial condition of the company at the close of 1928 was fairly strong, with total current assets of $1,661,230, as compared with total current liabilities of $779,170. Cash on hand amounted to $281,173, as compared with $76,878 as of August 31, 1928, the date of the last preceding balance sheet. Marketable securities also showed a big jump, being $454,486 on December 31, compared to nothing at the end of August. The net working capital at the close of the year was $882,060, as against $707,543, as of August 31. Book value of the common stock was indicated as $11.34 a share, as compared with $10.54 a share in August.

Officers of the Federal Mogul Corporation, as recently reported, are J. H. Muzzy chairman, L. P. Jones president, H. G. Muzzy vice-president, S. C. Reynolds treasurer and D. W. Rodger secretary. Directors are Messrs. J. H. and H. G. Muzzy, Jones, Reynolds and Rodger; F. C. Heath, H. W. Grant and C. R. Murphy. The company's fiscal year conforms to the calendar, and the annual meeting is held on the first Tuesday in February. The executive offices and plants are at Detroit.

Following is a comparative balance sheet, showing conditions as of December 31 and August 31, 1928:—

ASSETS

	Dec. 31, '28	Aug. 31, '28
Land, buildings, equipment, etc. (less depreciation)	$648,567	$883,447
Good will	1	1
Other assets	4,410	3,661
Deferred charges	22,272	23,404
Current Assets—		
Cash	281,173	76,878
Marketable securities	454,486	.....
Notes receivable	17,409	18,255
Accounts receivable less allowances	371,734	474,442
Inventories	536,428	449,617
Total current assets	$1,661,230	$1,019,192
Total assets	$2,336,480	$1,929,705

LIABILITIES

†Capital stock	$852,000	$1,370,563
Profit and loss	622,795	
Current Liabilities—		
Notes payable	50,000	.....
Accounts payable	330,941	215,012
Accruals	.....	1,637
Tax reserve	59,229	85,000
Dividends payable	39,000	12,000
Total current liabilities	$779,170	$311,649
Total liabilities	$2,336,480	$1,929,705
*Net working capital	$882,060	$707,543

*Based on current assets and current liabilities as above.
†Represented by 130,000 shares.

Rubber Prices

RUBBER EXCHANGE OF NEW YORK

	High	Low.	Close.	Prev. Close.
July	20.30	20.00	20.30	20.10
August	20.60	20.60	20.50a	20.70 20.30
September	21.00	20.80	21.00	20.70
October			*21.10	20.90
November			*21.30	21.10
December	21.00	21.50	21.50a	21.60 21.30
January	21.80	21.60	21.80	21.60
February			*22.00	21.80
March	22.30	22.10	22.20a	22.30 21.90
April			*22.30	22.00
May			*22.50	22.20
Spot			*20.30	20.10
Sales, lots			558	436

*Nominal. †Trading.

OUTSIDE CLOSING PRICES

(Per pound, delivered New York.)

Plantation—	Bid.	Asked.
Ribbed Smoked Sheets—		
Spot	20¾	20½
June	20¼	20½
July	20⅜	20⅝
July-September	20⅜	21
October-December	21⅜	21⅝
Spot—		
First latex crepe	21¼	21½
Thin pale latex	21⅜	22
Clean thin brown crepe	18½	18⅝
†Specky crepe	18¼	18½
Rolled brown crepe	14¼	14½
No. 2 amber	18¾	19
No. 3 amber	18½	18¾
No. 4 amber	18¼	18½
*Paras—		
Up-river, fine, spot	21¾	22¼
do, coarse	12	12½
Acera, fine, spot	22¾	23
Caucho, Ball—Upper	12	12½
Centrals—		
*Esmeraldas	..	13
*Central scrap	..	13
Guayule, washed, dried	..	19
†Balata—		
*Block Ciudad	54	..
*Surinam sheet	56	..
*Manaos block	55	..
Peruvian block	25	26

SCRAP RUBBER

(Dealers' buying prices, f. o. b. N. Y.)

Boots and shoes, black, ton	$18.00a20.00
Arctics, cwt	.50a .60
Inner tubes, mixed, cwt	3.50a 3.75
Inner tubes, red, cwt	4.50a 4.75
Tires, standard, mixed, ton	18.00a19.00
Inner tubes, No. 1, cwt	6.50a 6.75
Inner tubes, No. 2, cwt	3.50a 3.75
Mixed hose, soft, cwt	.50a .55
Hose, air brake, ton	24.50a25.00

*Nominal. †Sold on sample only.

Philadelphia, June 27.—A committee of directors of the Autocar Company has been appointed to study proposed consolidation with Brockway Motor Truck Corporation. After such study has been completed committee will make recommendations to full board as to whether it considers such merger of advantage to the Autocar Company.

Young Spring to Pay Dividend in Stock

Detroit, June 27.—Directors of L. A. Young Spring and Wire Corporation at a meeting to be held sometime before July 15, will declare a stock dividend and will make some change in the present cash rate, according to L. A. Young, president.

"Our earnings in first half of current year," he said, "will be equal to around $4.60 a share after all charges and taxes earned on our 330,000 shares no-par capital stock.

"The outlook for third quarter is good, and I see no sign of any appreciable let up.

"Last month we consumed 15,000,416 pounds of wire, or 77,008 tons, equal to 108,017 miles, enough to encircle the world four and one-third times.

"We equipped last month 420,000 automobiles with cushion springs and 125,000 ice boxes with refrigerator racks. We also equipped last month 39,500 stoves with oven racks and sold and delivered 12,000,000 wire coat hangers."

Earnings of around $4.60 a share on 330,000 shares in the first six months of current year would compare with $3.80 a share earned on 260,882 common shares in the first six months of 1928 after estimating Federal taxes. Current regular dividend rate is 50 cents quarterly and in addition company has been paying 25 cents extra quarterly.

MAJOR SPECIFICATIONS AND MECHANICAL DETAILS OF

Make and Model	Capacity—tons	Chassis price	Engine	No. of Cyl.	Bore and Stroke	Tax H. P.	Oil System	Carburetor	Fuel Feed	Ignit. System	Gearset	Location	No. Spds. for.	Rear Axle	Final Drive	Reduction in Low	Brakes, foot	Brakes, hand	Standard Wheel Base	Chassis Weight	Standard Tire Sizes Front	Rear
Am. La France Chief	2	3650	Own	6	3¾x5	33.0	Pw	Zen	Vac	Rem	Own	C	4	Tim	Wo	31.2	4	D	156	6200	32x6	32x6 D
Am. La France W	3–4	3850	Own 2 R	4	4¼x6	28.9	P&S	Zen	Vac	A B	Own	C	4	Own	D R	47.4	D	R	160	7200	S 36x5	S 36x5 D
Am. La France S	4–4½	5200	Own 5 R	4	4¾x6	36.2	P&S	Zen	Vac	A B	Own	C	4	Own	Wo	54.4	D	R	165	8900	S 36x6	S 36x6 D
Am. La France V	5	5500	Own 5 R	4	4¾x6	36.2	P&S	Zen	Vac	A B	Own	C	4	Own	Wo	54.4	D	R	165	9800	S 36x5	S 40x6 D
Am. La France Z	6½	5750	Own 5 R	4	4¾x6	36.2	P&S	Zen	Vac	A B	Own	C	4	Own	Wo	63.5	D	R	165	10000	S 36x7	S 40x7 D
Am. La France U	7½	6000	Own 5 R	4	4¾x6	36.2	P&S	Zen	Vac	A B	Own	C	4	Own	—	63.5	D	R	165	10500	S 36x7	S 40x8 D
Autocar S A	1½	2700	Own	6	3¾x4½	33.8	Pb	Zen	Vac	L-N	Br-L 35	U	4	Own S A	Sp	27.9	4	R	150	3900	32x6	32x6
Autocar S D	2	3000	Own	6	3¾x4½	33.8	Pb	Zen	Vac	L-N	Br-L 35	U	4	Own S D	D R	33.9	4	R	150	4850	32x6	32x6 D
†Autocar H	3	3750	Own	4	4½x5½	32.4	C S	Str	Vac	A B	Own T	U	4	Own H	D R	47.8	R	R	114	5800	34x5 S	36x10 S
†Autocar S H	3	4000	Own	6	4⅛x4¾	40.8	Pb	Str	Vac	R B	Own T	U	4	Own H	D R	47.8	R	R	114	5800	34x5 S	36x10 S
Autocar T	3	5000	Own	6	4⅜x4¾	45.9	Pb	Str	Vac	R B	Own T	U	4	Own T	D R	40.7	R	R	187	7100	36x8	36x8 D
†Autocar H S	3½	4100	Own	4	4½x4¾	32.4	C S	Str	Vac	A B	Own T	U	4	Own J	D R	55.2	R	R	114	6900	34x6 S	36x12 S
†Autocar S H S	3½	4400	Own	6	4⅜x5½	45.9	Pb	Str	Vac	R B	Own T	U	4	Own J	D R	55.2	R	R	114	7600	34x6 S	36x12 S
Autocar T S	3½	5350	Own	6	4⅜x4¾	45.9	Pb	Str	Vac	R B	Own T	U	4	Own J	D R	46.5	R	R	187	7100	36x8	36x8 D
Autocar S C M	5	5000	Own	6	4½x4¾	48.6	Pb	Str	Vac	R B	Own B	C	4	Own M	D R	72.1	R	R	162	8600	34x7 S	36x14 S
Brockway Junior	1	1195	Wis C	4	3¾x5	22.5	Pb	Zen	Vac	Aut	Br-L 20	U	3	Col 36001	Sp	21.27	4	Tr	130	3100	30x5	30x5
Brockway J F	1	1195	Wis F	6	3¼x4¼	25.4	Pb	Zen	Vac	Aut	Br-L 20	U	3	Col 36001	Sp	21.3	4	Tr	137	3450	30x5	30x5
Brockway C J B F	1½	1475	Wis F	6	3¼x4¼	25.4	Pb	Zen	Vac	Aut	Br-L 20	U	3	Col 54030	Sp	21.3	4	Tr	149	3650	32x6	32x6
Brockway E	1½	1765	Wis S U	4	4 x5	25.6	Pb	Zen	Vac	L-N	Br-L 30	U	3	Col 55001	Sp	21.0	4	Tr	139½	3650	32x6	32x6
Brockway E N	1½	1965	Wis N	6	3½x4¼	29.4	Pb	Zen	Vac	Aut	Br-L 35	U	4	Col 55001	Sp	31.3	4	Tr	155¾	4400	32x6	32x6
Brockway S	2	2450	Wis S U	4	4 x5	25.6	Pb	Zen	Vac	L-N	Br-L 35	U	4	Wis 4610	D R	38.79	R	Tr	150¼	5100	S 34x4	S 34x8
Brockway S Y	2	2950	Wis Y	6	3⅜x5	27.3	Pb	Zen	Vac	L-N	Br-L 35	U	4	Wis 4610	D R	35.3	4	Tr	151¾	4950	32x6	34x7
*Brockway K	3	3420	Con K	4	4⅛x5¼	27.2	Pw	Zen	Vac	Eis	Br-L 35	C	4	Tim 65700 S	Wo	41.5	R	D	154⅛	5855	S 36x5	S 36x10
Brockway K R	3	3625	Con L	4	4½x5½	32.4	Pw	Zen	Vac	Eis	Br-L 55	C	4	Tim 65700 S	Wo	36.38	R	D	160⅜	6290	S 36x5	S 36x10
Brockway K W	3	3950	Wis H	6	4 x5	38.2	Pb	Zen	Vac	L-N	Br-L 51	U	4	Wis 69300	D R	33.7	R	D	170	6920	34x7	D 34x7
*Brockway R	4	4200	Con L	4	4½x5½	32.4	Pw	Zen	Vac	Eis	Br-L 55	C	4	Tim 66600	Wo	46.8	R	R	164	7890	S 36x5	S 36x12
Brockway T	5–7	5200	Con B 7	4	5 x6	40.0	Pw	Zen	Vac	Eis	Br-L 60	C	4	Tim 68700	Wo	53.5	R	D	175	10065	S 36x6	S 40x14
Chevrolet	½	400	Own	6	3⅛x3¾	26.3	C S	Car	P	Rem	Own	U	3	Own	Sp	12.68	4	R	107	1815	4.50x20	4.50x20
Chevrolet	1½	545	Own	6	3⅛x3¾	26.3	C S	Car	P	Rem	Own	U	4	Own	Sp	30.05	4	R	131	2375	30x5	30x5
Commerce 20 Y	1	1600	Bud H S 6	6	3⅜x4½	27.3	Pw	Zen	Vac	Aut	Br-L	U	4	Col	Sp	25.5	4	—	142	3900	B 30x5	B 30x5
Commerce S 11 Y	1½	1900	Bud H S 6	6	3⅜x4½	27.3	Pw	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.2	4	—	162	4300	B 30x5	D B 30x5
Commerce 30 Z	1½	2900	Bud D S 6	6	3⅝x5	31.2	Pw	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	—	168	4700	B 34x5	D B 34x5
Commerce 40 Z	2	3240	Bud D S 6	6	3⅝x5	31.2	Pw	Zen	Vas	Aut	Br-L	U	4	Tim	Wo	34.8	4	—	168	4900	B 36x6	D B 36x6
Commerce 50 Z	2½	4415	Bud B U S	6	4 x5⅛	38.4	Pw	Zen	Vac	Aut	Br-L	U	5	Tim	Wo	63.0	4	—	175	7000	S 36x5	S 36x10
Commerce 60 Z	3	4480	Bud B U S	6	4 x5⅛	38.4	Pw	Zen	Vac	Aut	Br-L	U	5	Tim	Wo	63.0	4	—	175	7100	S 36x5	S 36x12
Commerce 70 Z	3½	5250	Bud B A 6	6	4⅛x5⅛	40.8	Pw	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	98.2	R	—	175	8200	S 36x6	S 36x12
Commerce 80 Z	4	5330	Bud B A 6	6	4⅛x5⅛	40.8	Pw	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	98.2	R	—	175	8400	S 36x6	S 36x14
Day Elder M F	1¼	1345	Con 16-C	6	3⅜x4⅝	27.3	Pb	Zen	Vac	Rem	Br-L 20A	U	3	Tim 52000 H	Sp	25.01	R	R	131	3100	30x5	30x5
Day Elder G F	1½	2050	Con 16-C	6	3⅜x4⅝	27.3	Pb	Zen	Vac	Rem	Br-L 20A	U	3	Tim 5622 H	Sp	29.30	R	R	156	3900	30x5	32x6
Day Elder H F	2	2500	Con 16-C	6	3⅜x4⅝	27.3	Pb	Zen	Vac	Rem	Br-L 35	U	4	Tim 63702 H	Wo	49.79	R	R	156	4400	S 34x4	S 34x7
Day Elder J F	3	3725	Con 18 R	6	4 x4½	38.4	Pb	Zen	Vac	Rem	Br-L 51	U	4	Tim 65000 H	Wo	37.20	R	R	156	6500	S 36x5	S 36x10
Day Elder K 6	4	4775	Con 21 R	6	4⅜x4¾	45.9	Pb	Zen	Vac	Rem	Br-L 60	C	4	Tim 66702 D	Wo	49.60	R	R	170	8500	S 36x5	S 36x12
Day Elder L 6	5–6	5300	Con 21 R	6	4⅜x4¾	45.9	Pb	Zen	Vac	Eis	Br-L 60	C	4	Tim 67700 D	Wo	64.60	R	R	170	10000	S 36x6	S 40x7 D
Diamond T 151	1	1095	Con 18 E	6	3⅜x4	27.3	Pb	Zen	Gra	Aut	Cov	U	3	Col	Sp	—	4	D	132	3200	30x5	30x5
Diamond T 290	1½	1475	Her W X A	6	3½x4½	27.3	Pb	Zen	Gra	Aut	Cov	U	4	Col	Sp	—	4	D	156¼	4160	30x5	30x5 D
Diamond T 302	2	1650	Her W X B	6	3¾x4½	33.8	Pb	Zen	Gra	Aut	Cov	U	4	Clark	Sp	—	4	D	157¾	4600	32x6	32x6 D
Diamond T 502	2½	2675	Her W X C	6	4 x4½	38.4	Pb	Zen	Gra	Aut	Cov	U	4	Tim	Wo	—	4	D	163	5850	34x7	34x7 D
Diamond T 505	2½	2675	Her W X C	6	4 x4½	38.4	Pb	Zen	Gra	Aut	Cov	U	4	Wis	D R	—	4	D	171½	5850	34x7	34x7 D
Diamond T 550	2½	2195	Her W X C	6	4 x4½	38.4	Pb	Zen	Gra	Aut	Cov	U	4	Clark	Sp	—	4	D	165	5400	32x6	32x6 D
Diamond T 601	3	3510	Her Y X C	6	4⅜x4¾	45.9	Pb	Zen	Gra	Aut	Br-L	A	4	Tim	Wo	—	4	D	163½	6800	36x8	36x8 D
Diamond T 605	3	3810	Her Y X C	6	4⅜x4¾	45.9	Pb	Zen	Gra	Aut	Cov	U	4	Wis	D R	—	4	D	161½	6800	36x8	36x8 D
Diamond T 700	3½	4850	Her Y X C	6	4⅜x4¾	45.9	Pb	Zen	Gra	Aut	Cov	A	4	Tim	Wo	—	R	D	162	8100	S 36x5	S 36x10
Diamond T 800	4	5325	Her Y X C	6	4⅜x4¾	45.9	Pb	Zen	Gra	Aut	Br-L	A	7	Own	Wo	—	4	D	195⅜	8300	36x8	4WH 36x8
Diamond T 1000	5	5500	Her Y X C 2	6	4½x4¾	48.6	Pb	Zen	Gra	Aut	Br-L	A	4	Tim	Wo	—	R	D	170½	10000	S 36x6	S 40x12
Diamond T 2500	10–12	9750	Wak	6	5 x5¾	60.0	Pb	Zen	Gra	Aut	Br-L	A	7	Tim	Wo	—	4	D	194	13100	S 36x7	S4W 36x12
Dodge Bros.	½	665	Own	6	3⅜x3⅞	27.3	Pb	Stw	Vac	N E	Own	U	3	Own	Sp	15.2	4	D	110	1965	29x5.00 B	29x5.00 B
Dodge Bros.	¾	775	Own	6	3⅜x3⅞	27.3	Pb	Stw	Vac	N E	Own	U	3	Own	Sp	17.4	4	D	120	2510	31x5.25 B	31x5.25 B
Dodge Bros.	1	995	Own	6	3⅜x3⅞	27.3	Pb	Stw	Vac	N E	W-G	U	4	Own	Sp	23.8	4	D	130	2920	30x5	30x5
Dodge Bros.	1	1065	Own	6	3⅜x3⅞	27.3	Pb	Stw	Vac	N E	W-G	U	4	Own	Sp	23.8	4	D	140	2955	30x5	30x5
Dodge Bros.	1½	1345	Own	6	3⅜x3⅞	27.3	Pb	Stw	Vac	N E	Own	U	4	Own	Sp	36.8	4	D	150	3695	32x6	32x6
Dodge Bros.	1½	1415	Own	6	3⅜x3⅞	27.3	Pb	Stw	Vac	N E	Own	U	4	Own	Sp	36.8	4	D	165	3810	32x6	32x6
Dodge Bros.	2	1445	Own	6	3⅜x4½	27.3	Pb	Zen	Vac	N E	Own	U	4	Own	Sp	41.4	4	D	114	3725	32x6	34x7
Dodge Bros.	2	1545	Own	6	3⅜x4½	27.3	Pb	Zen	Vac	N E	Own	U	4	Own	Sp	41.4	4	D	150	3930	32x6	34x7
Dodge Bros.	2	1615	Own	6	3⅜x4½	27.3	Pb	Zen	Vac	N E	Own	U	4	Own	Sp	41.4	4	D	165	4070	32x6	34x7
Dodge Bros.	3	1745	Own	6	3⅜x4½	27.3	Pb	Zen	Vac	N E	Own	U	4	Own	Sp	46.3	4	D	135	4225	32x6	32x6 D
Durant Com. Chassis	½	495	Con	4	3⅜x4¼	18.2	Pb	Til	Vac	Aut	Own	C	3	Own	Sp	16.16	4	4	107	1670	28x4.75	28x4.75
Fargo Packet	½	545	Own	4	3⅝x4⅛	21.0	Pb	Car	Vac	Rem	Own	U	3	Own	Sp	14.29	4	Tr	—	1835	4.75x20	4.75x20
Fargo Clipper	¾	725	Own	6	3⅛x4¼	23.4	Pb	Str	Vac	Rem	Own	U	3	Own	Sp	14.29	4	Tr	—	2325	5.50x18	5.50x18
Ford A A	1½	540	Own	4	3⅞x4¼	24.0	P&S	Zen	Gra	Own	Own	U	3	Own	Wo	*15.95	4	4	131½	2250	30x5	32x6
F. W. D.—H	2	3300	Wis S U	4	4 x5	25.6	Pb	Zen	Vac	Eis	Cotta	C	4	Own	St	38.1	4	k	121	5300	34x7	34x7
F. W. D.—H 6	2	3425	Wak	6	3½x4½	29.4	Pb	Zen	Vac	Eis	Br-L	U	4	Own	St	35.0	4	R	133	5500	34x7	34x7
F. W. D.—B	3	4200	Own	4	4¾x5½	36.1	Pb	Str	Gra	Eis	Own	C	3	Own	St	35.6	4	R	124	6460	36x6 S	36x6 S
F. W. D.—B 5	3	4525	Own	4	4¾x5½	36.1	Pb	Str	Gra	Eis	Own	C	5	Own	St	88.6	4	R	132	6800	36x6 S	36x6 S
F. W. D.—U 6	3½	4575	Wak	6	4 x4¾	38.6	Pb	Zen	Vac	Eis	Own	C	5	Own	St	88.6	4	R	148	7200	36x6 S	36x6 S
F. W. D.—H T	2	3900	Wis S U	4	4 x5	25.6	Pb	Zen	Vac	Eis	Br-L	C	7	Own	St	84.7	4	R	120	6000	36x8	36x8
F. W. D.—B T	3	4742	Own	4	4¾x5½	36.1	Pb	Str	Vac	Eis	Own	C	5	Own	St	101.0	4	R	133¾	7700	40x7 S	40x5 S D
F. W. D.—U 4	3	4575	Own	4	4¾x5½	36.1	Pb	Str	Vac	Eis	Own	C	5	Own	St	88.6	4	R	148	7000	36x6 S	36x6 S
F. W. D.—X 6	6	6500	Wak	6	4¼x4¾	43.3	Pb	Zen	Vac	Eis	Own	C	5	Own	St	88.6	4	4	170	9500	36x8	36x8
Garford 20 Y	1	1600	Bud H S 6	6	3⅜x4½	27.3	Pw	Zen	Vac	Aut	Br-L	U	4	Col	Sp	25.5	4	—	142	3900	B 30x5	B 30x5
Garford S 11 Y	1½	1900	Bud H S 6	6	3⅜x4½	27.3	Pw	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.2	4	—	162	4300	B 30x5	D B 30x5
Garford 30 Z	1½	2990	Bud D S 6	6	3⅝x5	31.2	Pw	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	—	168	4700	B 34x5	D B 34x5
Garford 40 Z	2	3240	Bud D S 6	6	3⅝x5	31.2	Pw	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	—	168	4900	B 36x6	D B 36x6
Garford 50 Z	2½	4419	Bud B U S	6	4 x5⅛	38.4	Pw	Zen	Vac	Aut	Br-L	U	5	Tim	Wo	63.0	4	—	175	7000	S 36x5	S 36x10
Garford 60 Z	3	4480	Bud B U S	6	4 x5⅛	38.4	Pw	Zen	Vac	Aut	Br-L	U	5	Tim	Wo	63.0	4	—	175	7100	S 36x5	S 36x12
Garford 70 Z	3½	5250	Bud B A 6	6	4⅛x5⅛	40.8	Pw	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	98.2	R	—	175	8200	S 36x6	S 36x12
Garford 80 Z	4	5330	Bud B A 6	6	4⅛x5⅛	40.8	Pw	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	98.2	R	—	175	8400	S 36x6	S 36x14
Gramm Imp. Jr.	*9000	3785	——	6	4⅜x4¾	45.9	Pb	Zen	Vac	L-N	—	U	4	—	D R	—	4	R	210	6800	34x7	34x7 D
Gramm Imp. Sr.	*13000	4985	——	6	4¾x5¾	54.1	Pb	Zen	Vac	L-N	—	U	4	—	D R	—	4	R	236	9400	36x8	36x8 D
Gramm 263 N	1–1¼	1485	Lyc S	6	3¼x4½	25.3	Pb	Zen	Gra	Aut	Cov	U	3	Eat 1002	Sp	21.3	4	R	133	3485	30x5	32x6
Gramm 363 N	1½	1485	Lyc S	6	3¼x4½	25.3	Pb	Zen	Gra	Aut	Cov	U	3	Eat 1002	Sp	21.3	4	R	133	3485	30x5	32x6
Gramm 463 N	2	1885	Lyc S	6	3¼x4½	25.3	Pb	Zen	Gra	Aut	Cov	U	3	Eat 1504	Sp	25.3	4	R	133	3800	32x6	34x7
Gramm 564 N	2½	2940	Lyc T S	6	3⅞x5	36.2	Pb	Zen	Gra	Aut	Ful G U	U	3	Wis 6617	D R	25.4	4	R	133	4800	32x6	32x6 D
Gramm 35	3	4160	Her L	4	4½x5¾	32.4	Pb	Zen	Vac	Aut	Ful H	C	8	Wis 8800	D R	115.5	4	R	153	7100	36x5 S	36x10 S
Gramm 35	3	4160	Lyc T S	6	3⅞x5	36.2	Pw	Zen	Vac	Aut	Ful H	C	8	Wis 8800	D R	115.5	4	R	153	7100	36x5 S	36x10 S
Gramm 38—Low Bed	3	4160	Lyc T S	6	3⅞x5	36.2	Pw	Zen	Vac	Aut	Ful G U	C	8	Wis 67310	D R	33.1	4	R	153	7100	36x5 S	36x10 S
Gramm 45	4	4735	Her L	4	4½x5¾	32.4	Pb	Zen	Vac	Aut	Ful H	C	8	Wis 1450	D R	128.0	4	R	150	7600	36x5 S	36x12 S
Gramm 45	4	4735	Lyc T S	6	3⅞x5	36.2	Pw	Zen	Vac	Aut	Ful H	C	8	Wis 1450	D R	128.0	4	R	153	7600	36x5 S	36x12 S
Gramm 48—Low Bed	4	4735	Lyc T S	6	3⅞x5	36.2	Pw	Zen	Vac	Aut	Ful G U	U	4	Wis 1250	D R	34.2	4	R	133	7600	36x5 S	36x12 S
Gramm 60	5	5370	Her G	4	4¾x5¾	36.1	Pb	Zen	Vac	Aut	Ful H	C	8	Wis 1700	D R	133.4	4	R	153	8700	36x6 S	36x14 S
Gramm 60	5	5370	Lyc T S	6	3⅞x5	36.2	Pw	Zen	Vac	Aut	Ful G U	U	8	Wis 1700	D R	133.4	4	R	153	8700	36x6 S	36x14 S
GMC T 11	*3800	625	Pontiac	6	3⅛x3⅞	26.3	Pb	Mar	P	Rem	Own	U	3	Own	Sp	14.7	4	D	109⅝	1980	19x5.00 B	19x5.50 B
GMC T 19 (2003)	*6000	895	Pontiac	6	3⅛x3⅞	26.3	Pb	Mar	P	Rem	Own	U	4	Tim 5261 Bx	Sp	34.1	4	D	127¾	2925	20x5.50 B	32x6
*GMC T 30 (3003)	*8000	1395	Buick Std	6	3⅝x4⅝	26.3	Pb	Mar	P	Rem	Own	U	4	Eat 1606	Sp	28.6	4	D	136	4075	20x6.00 B	34x7
*GMC T 42 (4003)	*10000	1685	Buick Std	6	3⅝x4⅝	26.3	Pb	Mar	P	Rem	Own	U	4	Own	Sp	33.4	4	D	136	4510	20x7.00 B	36x8
*†GMC T 60 (5003)	*14500	2800	Buick Mst	6	3⅝x5	31.5	Pb	Mar	P	Rem	Own	U	4	Tim 65706 N	Wo	44.8	4	D	140	6090	36x6	36x6 D
*GMC K 102 (6001)	*28000	4250	Own 89	4	4½x6½	32.4	Pw	Mar	Vac	Eis	Own	C	7	Tim 67600	Wo	86.3	R	R	160	9520	36x6 S	40x14 S
*Hahn 24	1	1345	Her O	4	4 x5	25.6	Pb	Zen	Vac	Aut	Br-L 31	U	3	Eat 1002	Sp	—	R	R	138	3100	30x5	30x5
*Hahn 34	1½	2080	Her O	4	4 x5	25.6	Pb	Zen	Vac	Aut	Br-L 31	U	3	Eat 1504	Sp	—	R	R	150	3750	32x6	32x6
Hahn 465	2	2740	Con 6 B	6	3¾x5	33.5	Pb	Zen	Vac	Aut	Br-L 35	U	4	Eat 1504	Sp	—	R	R	160½	4300	32x6	34x7
Hahn 54	2½	3300	Her L	4	4½x5¾	32.4	Pb	Zen	Vac	R B	Br-L 51	U	4	Tim 65000	Wo	—	R	R	144	5600	36x4 S	36x8 S
†Hahn 56	2½	3440	Con 6 B	6	3¾x5	33.8	Pb	Zen	Vac	Rem	Br-L 51	U	4	Eat 2252	Sp	—	R	D	160	5300	32x6	32x6 D
Hahn L	3	3600	Her L	4	4½x5¾	32.4	Pb	Zen	Vac	R B	Br-L 51	U	4	Tim 65704	Sp	—	R	R	149	5900	36x5 S	36x5 S D

1929 COMMERCIAL CARS BUILT IN THE UNITED STATES

Make and Model	Capacity—tons	Chassis price	Engine	No. of Cyl.	Bore and Stroke	Tax H. P.	Oil System	Carburetor	Fuel Feed	Ignit. System	Gearset	Location	No. Spds. for.	Rear Axle	Final Drive	Reduction in Low	Brakes, foot	Brakes, hand	Standard Wheel Base	Chassis Weight	Standard Tire Sizes Front	Rear
Hahn 76	3½	4790	Her Y X C	6	4⅜x4¾	45.9	Pb	Zen	Vac	L-N	Br-L 51	U	4	Tim 65704	Wo	—	R	R	196	6500	34x7	34x7 D
Hahn M	4	4250	Her G	4	4¾x5¾	36.5	Pb	Zen	Vac	R B	Br-L 60	C	4	Tim 66700	Wo	—	R	R	160	7600	36x5 S	36x12 S
Hahn R	5	5100	Her G	4	4¾x5¾	36.5	Pb	Zen	Vac	R B	Br-L 60	C	4	Tim 66700	Wo	—	R	R	162	8800	36x6 S	40x6 S D
Hahn N	6	5200	Her G	4	4¾x5¾	36.4	Pb	Zen	Vac	R B	Br-L 60	C	4	Tim 66700	Wo	—	R	R	162	9200	36x6 S	40x6 S D
Indiana 200	1	1195	Wis F	6	3¼x4½	25.3	Pb	Zen	Vac	Aut	Br-L 20	U	3	Col 36000	Sp	20.71	4	Tr	137	3400	30x5	30x5
Indiana 300	1½	1475	Wis F	6	3¼x5¼	25.3	Pb	Zen	Vac	Aut	Br-L 20	U	3	Col 54030	Sp	21.26	4	Tr	149	3650	32x6	32x6
Indiana 111 X W	2	1850	Her Ox	4	4 x5	25.6	Pb	Str	Vac	Eis	Br-L 35	U	4	Wis 4611	Sp	36.60	R	Tr	120	3830	32x6	32x6 D
Indiana 400	2	2495	Wis Y	6	3⅜x5	27.3	Pb	Str	Vac	Aut	Br-L 35	U	4	Cla B 506	Sp	30.33	4	Tr	157	4800	32x6	34x7
Indiana 115 A	2½	2740	Her Ox	4	4 x5	25.6	Pb	Str	Vac	Eis	Br-L 35	U	4	Cla B 720	Sp	42.80	R	Tr	132	5000	32x6	34x7 D
Indiana 615 A	2½	3070	Wis Y	6	3⅜x5	27.3	Pb	Str	Vac	Eis	Br-L 35	U	4	Cla B 720	Sp	30.33	R	Tr	136	5190	32x6	34x7 D
Indiana 126	3	3495	Her L	4	4½x5¾	32.4	Pb	Str	Vac	Eis	Br-L 557	C	7	Tim 65704	Wo	80.7	R	Js	162½	7400	36x5	36x10 S
Indiana 127	3	3190	Her K	4	4¼x5¾	28.9	Pb	Str	Vac	Eis	Br-L 51	U	5	Cla B 720	Sp	41.72	R	R	141	6490	32x6	34x7 D
Indiana 626	3	4185	Wis H	6	4 x5	38.4	Pb	Str	Vac	Eis	Br-L 55	C	7	Tim 65704	Wo	80.7	R	Js	168½	7625	36x6 S	36x10 S
Indiana 627	3	3725	Wis H	6	4 x5	38.4	Pb	Str	Vac	Aut	Br-L 55	U	4	Cla B 720	Sp	42.80	R	R	162½	6500	36x5 S	36x10 S
Indiana 127 A W	3	3625	Her K	4	4¼x5¾	28.9	Pb	Str	Vac	Eis	Br-L 51	U	5	Wis 69311	Sp	41.72	R	Tr	141	6800	32x6	34x7 D
Indiana 627 A W	3	3925	Wis H	6	4 x5	38.4	Pb	Str	Vac	Eis	Br-L 51	U	5	Wis 69311	Sp	41.72	R	Tr	147	6800	32x6	34x7 D
Indiana 138	4	4380	Her L	4	4½x5¾	32.4	Pb	Str	Vac	Eis	Br-L 60	C	7	Tim 66700 D	Wo	83.1	R	R	162½	7850	36x5	36x12 S
Indiana 638	4	4955	Wis H	6	4 x5	38.4	Pb	Str	Vac	Eis	Br-L 60	C	7	Tim 66700 D	Wo	83.1	R	R	168½	8100	36x5	36x12 S
Indiana 41	5	5460	Her G	4	4¾x5¾	36.1	Pb	Str	Vac	Eis	Br-L 60	C	7	Tim 66700 D	Wo	95.0	R	R	172	9600	36x6	40x12 S
Int. Harvester Sp. Del.	¾	720	Wak X A	4	3½x4½	19.6	Pb	Zen	Vac	Rem	Mec	U	3	Eat 502 R	Sp	15.1	4	4	124	2200	30x5.25	30x5.25
Int. Harv. 6 Spd. Spec.	1	820	Wak X A	4	3½x4½	19.6	Pb	Zen	Vac	Rem	Mec	U	3	Eat 1124	Sp	*52.6	4	4	124	2430	30x5	30x5
Int. Harvester S-24	1¼	1160	Lyc C T	4	3¾x5	22.5	Pw	Zen	Vac	Rem	Own	U	3	Eat 1002	Sp	21.3	4	4	130	3200	32x4½	30x5
Int. Harvester S-26	1¼	1310	Lyc 4 S L	6	3¼x4½	25.3	Pb	Zen	Vac	Rem	Own	U	3	Eat 1002	Sp	21.3	4	4	130	3250	32x4½	30x5
Int. Harvester SF-34	1½	1450	Lyc C T	4	3¾x5	22.5	Pw	Zen	Vac	Rem	Own	U	3	Eat 1502	Sp	22.6	4	4	140	3520	30x5	32x6
Int. Harvester SF-36	1½	1600	Lyc 4 S L	6	3¼x4½	25.3	Pb	Zen	Vac	Rem	Own	U	3	Eat 1502	Sp	22.6	4	4	140	3570	30x5	32x6
Int. Harvester SD-44	2	1590	Lyc C T	4	3¾x5	22.5	Pw	Zen	Vac	A B	Own	U	4	Eat 2002	Sp	40.6	4	4	117	3700	30x5	32x6
Int. Harvester SD-46	2	1740	Lyc 4 S L	6	3¼x4½	25.3	Pb	Zen	Vac	A B	Own	U	4	Eat 2002	Sp	40.6	4	4	117	3750	30x5	32x6
Int. Harvester SF-46	2	1950	Lyc 4 S L	6	3¼x4½	25.3	Pb	Zen	Vac	Rem	Own	U	4	Eat 2002	Sp	40.6	4	4	140	4000	32x6	34x7
Int. Harvester 54-C	2½	3200	Own	4	4¼x5	28.9	C S	Zen	Gra	R B	Own	U	4	Own A M 428	Ch	51.8	R	D	140	6400	36x5	36x10
Int. Harvester 54	2½	3550	Own	4	4¼x5	28.9	C S	Zen	Gra	R B	Own	U	4	Eat 54 65000	D R	53.7	R	D	140	6345	36x5	36x8
Int. Harvester 74-C	3½	4550	Own	4	4¼x5	28.9	C S	Zen	Gra	R B	Own	U	4	Own A M 427	Ch	*86.0	R	D	154	8715	36x6	40x12
Int. Harvester 74	3½	4550	Own	4	4¼x5	28.9	C S	Zen	Gra	R B	Own	U	4	Eat 74 100000	D R	61.6	R	D	160	8175	36x6	40x12
Int. Harvester 104-C	5	4800	Own	4	4¼x5	28.9	C S	Zen	Gra	R B	Own	U	4	Own A M 427	Ch	86.0	R	D	154	8890	36x6	40x14
Int. Harvester HS-54	2½	3850	H-S 151	4	4¼x5½	28.9	Pb	Zen	Vac	R B	Own	U	5	Eat 54 65000	D R	60.5	4	4	*148	8000	36x5	36x8
Int. Harvester HS-54-C	2½	3850	do 151	4	4¼x5½	28.9	Pb	Zen	Vac	R B	Own	U	5	Own A M 428	Ch	63.8	4	4	*148	8665	36x5	36x10
Int. Harvester HS-74	3½	4850	do 152	4	4¾x5½	36.1	Pb	Zen	Vac	R B	Own	U	5	Eat 74 100000	D R	70.5	4	4	*160	10700	36x6	40x12
Int. Harvester HS-74-C	3½	4850	do 152	4	4¾x5½	36.1	Pb	Zen	Vac	R B	Own	U	5	Own A M 427	Ch	79.1	4	4	*160	11000	36x6	40x12
Int. Harv'st'r HS-104-C	5	5500	do 152	4	4¾x5½	36.1	Pb	Zen	Vac	R B	Own	U	5	Own A M 427	Ch	90.5	4	4	*160	11095	36x6	40x14
*Larrabee 20	1	1595	Con 16 C	6	3⅜x4⅝	27.3	Pb	Zen	Gra	Rem	Br-L	U	3	Col	Sp	4.15	4	D	142	4170	30x5	30x5
*Larrabee 30	1½	1875	Con 16 C	6	3⅜x4⅝	27.3	Pb	Zen	Gra	Rem	Br-L	U	3	Col	Sp	4.15	4	D	161	4550	32x6	32x6
*Larrabee 40	2	2965	Con 16 R	6	4 x4⅛	38.4	Pb	Zen	Gra	Rem	Br-L	U	4	Wis	D R	5.35	4	D	176	5950	32x6	32x6 D
*Larrabee 50	2½	3285	Con 16 R	6	4 x4⅛	38.4	Pb	Zen	Gra	Rem	Br-L	U	4	Wis	D R	5.35	4	D	183	6030	32x6	32x6 D
*Larrabee 60	3	3980	Con 18 R	6	4 x4½	38.4	Pb	Zen	Gra	Rem	Br-L	U	4	Tim	Wo	5.35	4	D	195	7140	34x7	34x7 D
*Larrabee 70	3½	4600	Con 20 R	6	4⅛x4¾	40.8	Pb	Zen	Gra	Rem	Br-L	C	7	Tim	Wo	9.5	4	D	205	7740	34x7	34x7 D
Mack BB	1½	3500	Own	4	4¼x5	28.9	P&S	Str	Vac	N E	Own	U	4	Own	Hyp.	Opt.	4	D	165½	—	32x6	32x6 D
Mack BB	1½	3600	Own	4	4¼x5	28.9	P&S	Str	Vac	N E	Own	U	4	Own	Hyp.	Opt.	4	D	177½	—	32x6	32x6 D
Mack AB	1½-2	3100	Own	4	4¼x5	28.9	P&S	Str	Gra	R B	Own	U	4	Own	Ch.	Opt.	R	D	2-Opt.	—	36x4 S	36x7 S
Mack AB	1½-2	3550	Own	4	4¼x5	28.9	P&S	Str	Gra	R B	Own	U	4	Own	D R	Opt.	R	D	2-Opt.	—	36x4 S	36x7 S
Mack AB	2½-3	3500	Own	4	4¼x5	28.9	P&S	Str	Gra	R B	Own	U	4	Own	Ch.	Op*.	R	D	2-Opt.	—	36x4 S	36x8 S
Mack AB	2½-3	3950	Own	4	4¼x5	28.9	P&S	Str	Gra	R B	Own	U	4	Own	D R	Opt.	R	D	2-Opt.	—	36x4 S	36x8 S
Mack BJ	3-4	5800	Own	6	4½x5½	48.6	P&S	Str	Vac	N E	Own	C	4	Own	D R	Opt.	4	D	3-Opt.	—	36x8	36x8 D
Mack AK	3½-5	5150	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch.	Opt.	4	Js	3-Opt.	—	36x5 S	36x5 D S
Mack AK	3½-5	5250	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	C	4	Own	D R	Opt.	4	D	3-Opt.	—	36x5 S	36x5 D S
Mack AC	3½-5	4950	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch.	Opt.	Js	R	3-Opt.	—	36x5 S	40x10 S
Mack AC	5½-7	5500	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch.	Opt.	Js	R	3-Opt.	—	36x6 S	40x12 S
Mack AC	7½	6000	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch.	Opt.	Js	R	3-Opt.	—	36x7 S	40x14 S
Mack AP	7½	9500	Own	6	5 x6	60.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch.	Opt.	R	Js	191	—	36x7 S	40x8 D S
Mack AB Tractor	5-6	3500	Own	4	4½x5	28.9	P&S	Str	Gra	R B	Own	U	4	Own	Ch.	Opt.	R	D	122½	—	36x4 S	36x4 D S
Mack AK Tractor	7-10	5150	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch.	Opt.	4	Js	128	—	34x5 S	36x5 D S
Mack AC Tractor	7-10	4950	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch.	Opt.	Js	R	128	—	34x5 S	36x5 D S
Mack AC Tractor	11-14	5500	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch.	Opt.	Js	R	128	—	34x6 S	36x6 D S
Mack AC Tractor	15	6000	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch.	Opt.	Js	R	128	—	34x7 S	36x7 D S
Mack AP Tractor	15	9500	Own	6	5 x6	60.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch.	Opt.	R	Js	147	—	34x7 S	36x7 D S
Mack AC 6-wheel	10	7500	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch.	Opt.	4 R	Js	2-Opt.	—	36x7 S	40x12 S
Mack AP 6-wheel	10	12000	Own	6	5 x6	60.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch.	Opt.	4 R	Js	2-Opt.	—	36x7	40x12 S
Moreland A-6	*6800	1275	Con 34 L	6	2⅞x4¾	19.84	Pb	Zen	Vac	Aut	Br-L 20	U	4	Tim 52000 H	Sp	24.17	4	D	134	3000	32x6.75	32x6.75
Moreland R R-6	*9300	1850	Con 16 C	6	3⅜x4⅝	27.3	Pb	Zen	P	Aut	Br-L 35	U	4	Tim 54000 H	Sp	32.95	4	D	158½	4000	32x6	32x6
Moreland B-6	*12000	2200	Con 16 C	6	3⅜x4⅝	27.3	Pb	Zen	P	Aut	Br-L 35	U	4	Tim 63721 H	Wo	34.8	4	D	158½	4500	34x7	34x7
Moreland E-6	*15000	3600	Her W X C	6	4 x4½	38.4	Pb	Zen	P	Aut	Br-L 51	U	4	Tim 65000 H	Wo	34.8	*4	D	182	6000	34x7	34x7 D
Moreland Ex. 6	*19000	3750	Her W X C	6	4 x4½	38.4	Pb	Zen	P	Aut	Br-L 51	U	5	Tim 65704 N	Wo	46.0	*4	D	182	6500	36x4 S	36x8 S
Moreland E D -6	*23000	4900	Her W X C	6	4 x4½	38.4	Pb	Zen	P	Aut	Br-L 51	U	5	Own	Wo	52.2	*4	D	196	8500	36x8	36x8
Moreland H-6	*22000	4650	Her Y X C	6	4⅜x4¾	45.9	Pb	Zen	P	Aut	Br-L 55	C	7	Tim 66702 W	Wo	82.3	*R	D	196	8000	36x5 S	36x10 S
Moreland H D S-6	*30000	5850	Her Y X C	6	4⅜x4¾	45.9	Pb	Zen	P	Aut	Br-L 60	C	7	Own	Wo	81.6	*4	D	220	10600	36x6 S	36x8
Moreland S D-6	*34000	6450	Her YXC 2	6	4½x4¾	48.6	Pb	Zen	P	Aut	Br-L 60	C	7	Own	Wo	89.0	*4	D	221	11500	36x7 S	36x10 S
Moreland T T-6	*34000	8000	Con 15 H	6	4½x5¾	48.6	Pw	Str	P	Aut	Br-L 70	C	7	Own	Wo	98.5	*4	D	221	12500	36x7 S	36x10 S
*Fleet Arrow F A-1	1½-2	2450	Own F A	6	3½x5	29.5	Pb	Str	A P	Rem	Own	U	3	Own	Sp	33.3	4	Tr	140	3950	32x6.00	34x7
*Pierce-Arrow F A-1	1½-2	2450	Own	6	3½x5	29.4	Pw	Str	P F	Del	Own	U	3	Tim	St	21.4	4	Tr	140	4100	32x6	32x6 D
*Pierce-Arrow X A-1	2	3500	Own	4	4 x5½	25.6	Pw	Str	Pre	Del	Own	C	4	Own	Wo	44.2	D	R	150	6750	36x4	36x5 D S
*Pierce-Arrow X B-1	3	3750	Own	4	4 x5½	25.6	Pw	Str	Pre	Del	Own	C	4	Own	Wo	48.1	D	R	150	6830	36x5	36x5 D S
*Pierce-Arrow H B-1	5	4500	Own	4	4 x5½	25.6	Pw	Str	Pre	Del	Own	C	7	Own	Wo	95.0	D	R	156	8400	36x5	36x6 D S
*†PierceArrow W C-1	4	5100	Own	4	4½x6¾	32.4	Pw	Str	Pre	Del	Own	C	4	Own	Wo	41.5	D	R	162	8780	36x5	36x6 D S
*†Pierce-Arrow R D-1	5	5400	Own	4	4½x6¾	32.4	Pw	Str	Pre	Del	Own	C	4	Own	Wo	40.5	D	R	162	9440	36x6	36x7 D S
*†Pierce-Arrow R F-1	7½	5600	Own	4	4½x6¾	32.4	Pw	Str	Pre	Del	Own	C	4	Own	Wo	51.9	D	R	168	10320	36x6	40x8 D S
†Pierce-Arrow R F-T	7½	5600	Own	4	4½x6¾	32.4	Pw	Str	Pre	Del	Own	C	4	Own	Wo	51.9	D	R	132	940	36x6	36x8 D S
Relay 20 B	1	1700	Bud H S 6	6	3⅜x4½	27.3	Pw	Zen	Vac	Aut	Br-L	U	4	Own	Relay	25.7	4	—	142	4100	B 30x5	B 30x5
Relay S 11 B	1½	1900	Bud H S 6	6	3⅜x4½	27.3	Pw	Zen	Vac	Aut	Br-L	U	4	Own	Relay	30.0	4	—	162	4500	B 30x5	D B 30x5
Relay 30 A	1½	2990	Bud D S 6	6	3⅜x5	31.2	Pw	Zen	Vac	Aut	Br-L	U	4	Own	Relay	34.5	4	—	168	5300	B 34x5	D B 34x5
Relay 40 A	2	3240	Bud D S 6	6	3⅜x5	31.2	Pw	Zen	Vac	Aut	Br-L	U	4	Own	Relay	34.5	4	—	168	5500	B 36x6	D B 36x6
Relay 50 C	2½	4415	Bud B U S	6	4 x5⅛	38.4	Pw	Zen	Vac	Aut	Br-L	U	5	Own	Relay	58.5	4	—	175	7300	B 36x6	S 36x10
Relay 60 C	3	4480	Bud B U S	6	4 x5⅛	38.4	Pw	Zen	Vac	Aut	Br-L	U	5	Own	Relay	58.5	4	—	175	7450	B 36x6	S 36x12
Relay 70 C	3½	5250	Bud B A 6	6	4⅛x5⅛	40.8	Pw	Zen	Vac	Aut	Cov	C	8	Own	Relay	84.2	R	—	175	8600	B 36x6	S 40x12
Relay 80 C	4	5330	Bud B A 6	6	4⅛x5⅛	40.8	Pw	Zen	Vac	Aut	Cov	C	8	Own	Relay	84.2	R	—	175	8800	B 36x6	S 40x14
Reo B A	½	895	Con 16 E	6	3⅜x4	27.3	Pb	Sch	Vac	N E	W-G	U	3	Sal	Sp	14.63	4	Tr	115	2290	28x5.25	28x5.25
Reo D A	1	995	Con 16 E	6	3⅜x4	27.3	Pb	Sch	Vac	N E	W-G	U	3	Own	Sp	18.4	4	Tr	123	2755	30x5	30x5
Reo D C	1	1075	Con 16 E	6	3⅜x4	27.3	Pb	Sch	Vac	N E	W-G	U	3	Own	Sp	18.4	4	Tr	138	2850	30x5	30x5
Reo F A	1½	1295	Own	6	3⅜x5	27.3	Pb	Sch	Vac	Rem	Own	U	4	Own	Sp	22.96	4	Tr	137	3525	32x6	32x6
Reo F E	1½	1395	Own	6	3⅜x5	27.3	Pb	Sch	Vac	Rem	Own	U	4	Own	Sp	22.96	4	Tr	152	3700	32x6	32x6
Reo F F	1½	1395	Own	6	3⅜x5	27.3	Pb	Sch	Vac	Rem	Own	U	4	Own	Sp	22.96	4	Tr	156	3750	32x6	32x6
Reo F C	2	1595	Own	6	3⅜x5	27.3	Pb	Sch	Vac	Rem	Own	U	4	Own	Sp	37.62	4	Tr	152	4025	32x6	32x6 D
Reo F D	2	1695	Own	6	3⅜x5	27.3	Pb	Sch	Vac	Rem	Own	U	4	Own	Sp	37.62	4	Tr	168	4075	32x6	32x6 D
Reo G A	3	2035	Own	6	3⅜x5	27.3	Pb	Sch	Vac	Rem	Own	U	4	Own	Sp	41.05	4	Tr	163	4625	32x6	32x6 D
Reo G C	3	2140	Own	6	3⅜x5	27.3	Pb	Sch	Vac	Rem	Own	U	4	Own	Sp	41.05	4	Tr	179	4850	32x6	32x6 D
Reo G D	3	1985	Own	6	3⅜x5	27.3	Pb	Sch	Vac	Rem	Own	U	4	Own	Sp	46.2	4	Tr	134	4570	32x6	32x6 D
*Republic 75-4	1¼	1395	Lyc C T	4	3¾x5	22.5	Pb	Zen	Vac	Aut	Ful	U	3	Eat	St	21.3	R	R	124	3000	30x5	30x5
*Republic 76-4	1½	1575	Lyc C T	4	3¾x5	22.5	Pb	Zen	Vac	Aut	Ful	U	3	Eat	St	21.3	R	R	146	3350	30x5	30x5
Republic 85	2	2095	Lyc C 4	4	4 x5	25.6	Pb	Zen	Vac	Aut	Ful	U	3	Eat	St	25.5	R	R	155	4250	30x5	30x5 D
Republic 88	2	1945	Lyc C 4	4	4 x5	25.6	Pb	Zen	Vac	Aut	Ful	U	3	Eat	St	26.5	R	R	110	3350	30x5	30x5 D
Republic 50	2	2095	Lyc 4 S L	6	3¼x4½	25.3	Pb	Zen	Vac	Aut	Ful	U	3	Eat	St	25.5	R	D	143	4100	30x5	30x5 D
Republic 58	2½	2495	Lyc C 4	4	4 x5	25.6	Pb	Zen	Vac	Aut	Ful	U	3	Eat	St	27.5	R	D	122	4300	32x6	32x6 D
Republic 60-61	2½	2985	Lyc T F	6	3⅝x5	31.5	Pb	Zen	Vac	Aut	Ful	U	3	Eat	St	22.0	R	D	151	4600	32x6	32x6 D
Republic 65	3	3695	Lyc T S	6	3⅞x5	36.2	Pb	Zen	Vac	Aut	Ful	U	4	Eat	D R	36.0	4	D	179	6100	34x7	34x7 D
Republic 15W	2	2545	Wak V	4	4 x5	25.6	Pw	Zen	Vac	A B	Ful	U	3	Eat	Int	28.8	D	R	153	4200	34x4 S	34x7 S
Republic 25W-25WRB	3	3390	Wak C U	4	4⅜x5¾	30.6	Pb	Zen	Vac	A B	Ful	U	4	Eat	Int	40.3	D	R	165	5800	36x5 S	36x10 S
Republic 30W-30WB	4½	4185	Wak C U	4	4⅜x5¾	30.6	Pb	Zen	Vac	A B	Ful	U	4	Eat	Int	49.2	D	R	156	6700	36x5 S	36x12 S

FEDERAL SCREW REPORTS BIG GAIN IN NET PROFIT; BUILDING 2 NEW PLANTS

New York, June 27.—The Federal Screw Company reports for the five months ended May 31 a net profit of $546,658, after all charges except Federal taxes. This compares with $161,502 for the corresponding period of last year.

May was the biggest month in the company's history in both sales and profits. Net, after all charges except Federal taxes, amounted to $125,561, against $26,281 in May, 1928.

Earnings in the last five months were equal, after deducting estimated Federal taxes, to $3.35 per share on the 143,500 shares of common stock outstanding, or at the annual rate of approximately $8 per share. Net sales for the five months ended May 31 totaled $2,779,908, over $600,000 in excess of the company's business for the whole of 1928.

The company is erecting two new plants to provide additional manufacturing facilities. These will be ready for occupancy within sixty days, and with new machinery and equipment, the management expects to show a substantial improvement in the ratio of net profits to the gross business.

The company's cash position as of the end of May showed current assets of $1,377,811, and current liabilities of $232,627, a ratio of 5.9 to 1.

BRIGGS & STRATTON CORP. SHIPMENTS MAKE BIG GAIN

Milwaukee, June 27.—Shipments of gasoline engines by Briggs & Stratton Corporation for the first half of 1929 will approximate 26,808 units, exceeding the company's entire gasoline engine output for 1927 and representing a 40 per cent. increase over the corresponding period of 1928, according to Stephen F. Briggs, president. The company's gasoline engine sales constitute about one-third of its total volume of business.

Major Specifications and Mechanical Details of 1929 Commercial Cars Built in the United States

Make and Model	Capacity—tons	Chassis price	Engine	No. of Cyl.	Bore and Stroke	Tax H. P.	Oil System	Carburetor	Fuel Feed	Ignit. System	Gearset	Location	No. Spds. for.	Rear Axle	Final Drive	Reduction in Low	Brakes, foot	Brakes, hand	Standard Wheel Base	Chassis Weight	Standard Tire Sizes Front	Rear
Rugby Lt. Dely. Panel	½	*775	Con	4	3⅛x4½	18.2	Pb	Til	Vac	Aut	Own	C	3	Own	Sp	14.79	4	4	107	2325f	28x4.75	28x4.75
Rugby Fast Mail Panel	¾	*975	Con	6	2⅞x4¾	19.8	Pb	Til	Vac	Aut	Own	U	3	Own	Sp	14.79	4	4	110	2600f	29x5	29x5
Rugby Express	1¼	975	Con	6	2¾x4¾	18.2	Pb	Til	Vac	Aut	Own	C	4	Own	Sp	22.4	4	4	128	2530	30x5	30x5
Rugby Mod. X	1¼	680	Con	4	3⅛x4½	18.2	Pb	Til	Vac	Aut	Own	C	3	Own	Sp	24.16	4	4	124	2175	29x5	30x5
Seldon 7	¾-1	1098	Con 29 L	6	2⅞x4¾	19.8	Pb	Zen	Vac	Aut	Br-L	U	3	Tim	Sp	23.2	4	D	124	3100	30x5	30x5
Seldon 17C	1-1½	1398	Con 18 E	6	3⅜x4	27.3	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.0	4	D	142	3750	30x5	30x5
Seldon 37C	2-2½	1950	Con 15 C	6	3⅜x4⅝	27.3	Pb	Str	Vac	Aut	Br-L	U	4	Tim	Sp	31.0	4	D	151	4600	30x5	30x5 D
Seldon 39C	2½-3	2898	Con 16 R	6	4 x4⅛	38.4	Pb	Str	Vac	Aut	Br-L	U	4	Tim	Sp	39.5	4	D	164	5800	32x6	32x6 D
Seldon 47CD	3½-4	3900	Con 18 R	6	4 x4½	38.4	Pb	Str	Vac	Aut	Br-L	U	4	Wis	D R	41.7	4	D	151	6900	34x7	34x7 D
Seldon 67C	4-5	4950	Con 21 R	6	4⅝x4¾	45.9	Pb	Str	Vac	Aut		C	7	Wis	D R	95.7	4	D	151	7500	36x8	36x8 D
Seldon 77B	5-7	5800	Bud G F 6	6	4¾x6	54.1	Pb	Str	Vac			C	7	Wis	D R	95.7	R	D	171	8842	36x8	S 36x12
Service 20 Y	1	1690	Bud H S 6	6	3⅛x4½	27.3	Pw	Zen	Vac	Aut	Br-L	U	4	Col	Sp	25.5	4	—	142	3900	B 30x5	B 30x5
Service S 11 Y	1½	1990	Bud H S 6	6	3⅛x4½	27.3	Pw	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.2	4	—	162	4300	B 30x5	D B 30x5
Service 40 Z	2	3240	Bud D S 6	6	3⅝x5	31.2	Pw	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	—	168	4900	B 36x6	D B 36x6
Service 60 Z	3	4480	Bud B U S	6	4 x5⅛	38.4	Pw	Zen	Vac	Aut	Br-L	U	5	Tim	Wo	63.0	4	—	175	7100	S 36x5	S 36x12
Service 80 Z	4	5330	Bud B A 6	6	4⅛x5⅛	40.8	Pw	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	98.2	R	—	175	8400	S 36x6	S 36x14
Standard 2½ K	2½-3½	3200	Con K 4	4	4½x5¼	27.2	Pb	Str	Vac	Aut	Br-L 35	C	4	Tim 65600	Sp Wo	34.8	R	D	147	5400	36x5 S	36x8 S
Standard 3½ K	3½-5	4350	Con L 4	4	4½x5½	32.4	Pb	Str	Vac	Aut	Br-L 55	C	7	Tim 66700	Sp Wo	83.0	R	D	160	7485	36x5 S	36x12 S
Standard 5 K	5-7	5250	Con B 5	4	4¾x6	36.1	Pb	Str	Vac	Aut	Br-L 60	C	7	Tim 66700	Sp Wo	83.6	R	D	164	8700	36x6 S	40x14 S
*Stewart Buddy 21	¾	895	Lyc W S G	6	2⅞x4¾	19.8	Pb	Str	Gra	Rem	W-G	U	3	Sal	Sp	30.0	R	D	118	2694	30x5.50	30x5.50
*Stewart Buddy 21 X	1	995	Lyc W S G	6	2⅞x4¾	19.8	Pb	Str	Vac	Rem	W-G	U	3	Sal	Sp	30.0	4	D	128	2806	30x5	30x5
*Stewart 16	1¼	1295	Lyc C T	4	3¾x5	22.5	Pb	Str	Vac	Rem	Ful	U	4	Cla	Sp	24.0	4	D	130	3326	32x6	32x6
*Stewart 16 X	1¼	1295	Lyc 4 S L	6	3¼x4½	25.3	Pw	Str	Vac	Rem	Ful	U	4	Cla	Sp	24.0	4	D	130	3326	32x6	32x6
*Stewart 24	1½	1645	Lyc C 4 W	4	4 x5	25.6	Pb	Str	Vac	Rem	Ful	U	4	Cla	Sp	27.3	4	D	145	3917	30x5	30x5 D
*Stewart 24 X	1½	1645	Lyc 4 S L	6	3¼x4½	25.3	Pw	Str	Vac	Rem	Ful	U	4	Cla	Sp	27.3	4	D	145	3917	30x5	30x5 D
*Stewart 25	2	1975	Lyc C 4 W	4	4 x5	25.6	Pb	Str	Vac	Rem	Ful	U	4	Tim	Sp	27.3	4	D	145	4088	32x6	34x7
*Stewart 25 X	2	1975	Lyc 4 S L	6	3¼x4½	25.3	Pw	Str	Vac	Rem	Ful	U	4	Tim	Sp	27.3	4	D	145	4088	32x6	34x7
*Stewart 25 W	2	2095	Lyc C 4 W	4	4 x5	25.6	Pb	Str	Vac	Rem	Ful	U	4	Tim	Sp	29.0	4	D	146	4160	32x6	34x7
*Stewart 25 X W	2	2095	Lyc 4 S L	6	3¼x4½	25.3	Pw	Str	Vac	Rem	Ful	U	4	Tim	Wo	29.0	4	D	145	4160	32x6	34x7
Stewart 26 X	2	2190	Lyc T	6	3⅜x5	31.5	Pw	Str	Vac	Rem	Ful	U	4	Tim	Sp	29.0	4	D	145	5020	32x6	32x6 D
Stewart 26 X W	2	2290	Lyc T	6	3⅜x5	31.5	Pw	Str	Vac	Rem	Ful	U	4	Tim	Wo	29.0	4	D	165	5095	32x6	32x6 D
*Stewart 18 X	2½	2690	Lyc T	6	3⅜x5	31.5	Pw	Str	Vac	Rem	Ful	U	4	Tim	Wo	29.0	4	D	165	5788	32x6	32x6 D
Stewart 19 X	3½	3690	Lyc F	6	3¾x5	36.2	Pw	Str	Vac	Rem	Ful	C	12	Tim	Wo	105.1	4	D	165	6990	36x5	36x10
*Stewart 22 X	4	4290	Lyc F	6	3⅞x5	36.2	Pw	Str	Vac	Rem	Ful	U	12	Tim	Wo	34.8	4	D	165	7990	36x5	36x12
Studebaker G K-N	1	1075	Own	6	3⅜x4⅝	27.3	P C	Str	P	Rem	Own	U	3	Own	Sp	13.7	4	Js	146	2830	30x5	30x5
Studebaker "77" Jr.	*3½	2585	Own	8	3½x4⅜	39.2	P C	Str	P	Rem	Ful	U	3	Eat	Sp	19.8	4	Js	158	4745	20x6.75 B	20x6.75 B
Studebaker "88" Spec.	*3½	2935	Own	8	3½x4⅜	39.2	P C	Str	P	Rem	Ful	U	3	Eat	Sp	19.8	4	Js	164	4745	20x7.50 B	20x7.50
Studebaker "98" H. D.	*4	3485	Own	8	3½x4⅜	39.2	P C	Str	P	Rem	Ful	U	4	Eat	Sp	24.6	4	Js	184	5210	20x7.50 B	20x7.50
Stud. Ersk. Mod. 52-B	½	675	Con 9 F	6	2¾x4½	18.0	P C	Sch	Vac	Rem	W-G	U	3	Tim	Sp	15.6	4	4	109	——	30x5	30x5
Victor 35	1½	1695	Con	6	3⅛x4	27.3	Pb	Zen	Vac	Rem	Cov	U	3	Tim	Sp	—	4	D	144	3200	30x5	30x5 D
Victor 45	2½	2495	Her	6	3¾x4½	33.7	Pb	Zen	Vac	Rem	Ful	U	4	Wis	D R	—	4	D	148	4500	32x6	32x6 D
Victor 75	3½	3895	Her	6	4 x4½	38.4	Pb	Zen	Vac	Rem	Ful	U	4	Wis	D R	—	4	D	162	6000	34x7	34x7 D
Whippet 98 A	½	380	Own 98 A	4	3⅛x4¾	15.6	Pb	Til	Vac	Aut	Own	U	3	Own	Sp	14.75	4	R	103¼	1650	28x4.75	28x4.75
Whippet 6 C-101	1½	645	Own 98 A	6	3⅛x3⅞	23.4	Pb	Til	Vac	Aut	Ful	U	4	Cla-B 364	Sp	35.5	4	R	131	2540	30x5	30x5
†White 15 B	1	1545	Own G K A	4	3¾x5⅛	22.5	C S	Zen	Vac	L-N	Own	C	4	Own	Sp	18.6	R	R	133½	3242	30x5	30x5
†White 57	1¼	2725	Own G R C	4	4 x5¾	25.6	Pw	Zen	Vac	L-N	Own	U	4	Own	Sp	19.3	R	R	146	3774	32x6	32x6
†White 20 A	1½	2125	Own G K A	4	3¾x5⅛	22.5	C S	Zen	Vac	L-N	Own	C	4	Own	D R	32.1	R	R	145½	4412	34x5	34x5 D P
†White 56	2	3125	Own G R C	4	4 x5¾	25.6	Pw	Zen	Vac	Mag	Own	U	4	Own	Sp	26.2	R	D	165	5157	36x4 S	36x7 S
†White 51 A	2½	3750	Own G R B	4	4¼x5¾	28.9	Pw	Zen	Vac	Mag	Own	U	4	Own	Sp	35.5	R	D	170	6256	36x5 S	36x8 S
†White 55	3½	4650	Own G R B	4	4¼x5¾	28.9	Pw	Zen	Vac	Mag	Own	U	4	Own	I G	66.1	D	R	174	8402	36x5 S	40x5 S D
†White 52 T	3½	4700	Own G R B	4	4¼x5¾	28.9	Pw	Zen	Vac	Mag	Own	U	4	Own	I G	76.5	D	R	129½	8126	36x5 S	40x5 S D
†White 52	5	5100	Own G R B	4	4¼x5¾	28.9	Pw	Zen	Vac	Mag	Own	U	5	Own	I G	92.3	D	R	174	9184	36x6 S	40x12 S
†*White 58	3	4490	Own G R B	4	4¼x5¾	28.9	Pw	Zen	Vac	Mag	Own	U	4	Own	I G	49.5	D	A	180	7400	36x5 S	36x5 S D
White 60	-	1850	Own 2 A	6	3½x4½	29.4	Pw	Zen	Vac	Rem	Own	U	3	Own	Sp	17.9	4	D	138	3738	30x5	30x5
White 61	1½	2450	Own 2 A	6	3½x4½	29.4	Pw	Zen	Vac	Rem	Own	U	4	Own	Sp	23.4	4	D	148	——	30x5	30x5 D
Willys-Knight 15	1½	1545	Own K G T	6	2⅞x4⅝	20.7	Pb	Til	Vac	Aut	Ful D U	U	3	Eat 1602	Sp	26.3	4	R	134	3300	30x5	32x6
Willys-Knight 16	1½	1595	Own K G T	6	2⅞x4⅝	20.7	Pb	Til	Vac	Aut	Ful D U	U	3	Eat 1602	Sp	26.3	4	R	151	3400	30x5	32x6
Willys-Knight 20	2	1945	Own K G T	6	3⅜x4¾	27.3	Pw	Til	Vac	Aut	Ful D U	U	3	Eat 1504	Sp	28.4	4	R	159	3800	32x6	34x7
Willys-Knight 21	2	1995	Own K G T	6	3⅜x4¾	27.3	Pw	Til	Vac	Aut	Ful D U	U	3	Eat 1504	Sp	28.4	4	R	164	3900	32x6	34x7
Willys-Knight 25	2½	2545	Own K G T	6	3⅜x4¾	27.3	Pw	Til	Vac	Aut	Ful G U	U	4	Wis 6617 B	D R	30.3	4	R	150	4920	32x6	32x6 D
Willys-Knight 26	2½	2595	Own K G T	6	3⅜x4¾	27.3	Pw	Til	Vac	Aut	Ful G U	U	4	Wis 6617 B	D R	30.3	4	R	164	5020	32x6	32x6 D

GENERAL NOTATIONS

*REFERENCE MARKS apply to individual lines only and explanations are given under the subdivision for each company in the "SPECIAL NOTATIONS."

CAPACITIES given in this table are in tons or fractions of tons. Bus capacities are given in number of passengers. *Shows maximum allowable gross weight.

TIRE EQUIPMENT where not otherwise indicated is solid.

WHEEL BASES given are standard, but optional wheel bases are available in many cases.

ENGINE—Bud, Buda; Con, Continental; Her, Hercules; Kgt, Knight; Lyc, Lycoming; Wak, Waukesha; Wis, Wisconsin.

LUBRICATION—Pb, pressure lubrication to main and connecting rod bearings; Pw, full pressure lubrication to all bearings, including wrist-pins; P&S, pressure with splash; CS, circulating splash; Sp, Splash.

CARBURETOR—Car, Carter; Hol, Holley; Joh, Johnson; Mar, Marvel; Sch, Wheeler-Schebler; Str, Stromberg; Stw, Detroit lubricator; Til, Tillotson; Zen, Zenith-Detroit.

FUM. FEED—Gra, Gravity; Pre, Pressure; Vac, Vacuum tank; P, Fuel pump, Auto-P, Auto pulse; E, Electric pump.

IGNITION — AB, American-Bosch; Aut, Electric Auto-Lite; Apo, Apollo; Del, Dayton Engine Laboratory; Eis, Eisemann; L-N, Leece-Neville; N-E, North East; RB, Robert Bosch; Rem, Delco-Remy; Spf, Splitdorf.

TRANSMISSION—Br L, Brown-Lipe; Cov, Covert; Ful, Fuller; Mec, Mechanics Machine; Mun, Muncie; W-G Warner Gear.

LOCATION—C, Center, Amid; U, in unit with engine; J, Jackshaft.

REAR AXLE—Cla, Clark Equipment; Col, Columbia; Eat, Eaton; Sal, Salisbury; Tim, Timken; Wis, Wisconsin.

FINAL DRIVE—St, Straight bevel; Sp, Spiral bevel; Wo, Worm; DR, Double Reduction, Ch, Chain; IG, Internal Gear.

BRAKES—Js, Jackshaft; R, Rear wheels; D, Drive shaft; 4 Four-wheel; Tr, Transmission; W, Westinghouse air brake.

TIRES—B, Balloon; D, Dual; S, Solid.

SPECIAL NOTATIONS

AMERICAN-LA FRANCE

*Chief model also available as 2½-ton model, 34x7 tire, dual rear, weight 6,400. Price $5,900.

AUTOCAR

†Engines in these models are located under the driver's seat.

DURANT LINE

*Price includes panel body.

G. M. C. LINE

*Capacity given in all cases is maximum allowable total gross weight, including chassis, cab, body and load.

Model T-18 is available in six standard types with different tire and wheel equipment. Each has a specified straight rating capacity. Three types have 127 ¾-inch wheel base and three have 145¾-inch wheel base.

Model T-30 is built in nine types, varying in capacity, tire and wheel equipment on three wheel bases—136, 152, 164 inches.

Model T-42 is built in twelve types, varying in capacity, tire and wheel equipment on four wheel bases—136, 152, 164, 176 inches.

Model T-60 is built in twelve types, varying in capacity, tire and wheel equipment on four wheel bases—140, 160, 180, 200 inches.

Model K-102 is also built as type 600Z with the same specifications except on 134-inch wheel base. Price $4,350.

FLEET-ARROW LINE

*Model F. A. 1 is also available as Model F. A. 2, at $2,600 on wheel base of 140 inches, weight 3,975 lbs.; and as Model F. A. 3, at $2,850, with seven-speed transmission, on 159-inch wheelbase, weight, 3,985 lbs.

HAHN LINE

*Model 22 also available as Model 26, priced $1,495, on 144-inch wheel base, with Buda H. S. engine, 6-cyl. 3⅜x4½ inches rated 27.3 h.p., weight 3,200 lbs.

*Model 34 also available as Model 36, with Buda H. S. 6 engine (described above), weight 3,850 lbs.

*Model 44 also available as Model 46, priced $2,410, on 156-inch wheel base, with Buda H. S. 6 engine, as in Model 26, weight 4,200 lbs.

†Model 56 also available on 171-inch wheel base.

INTERNATIONAL HARVESTER LINE

*Model HS-54 also available in the following wheel bases, 130-inch tractor, 179, 185 and 200-inch.

*Model HS-54-C also available in the following wheel bases, 130-inch tractor 179, 185 and 200-inch.

†Frame is reinforced with inserted channels in each side rail, extending from dash to rear end.

*Model HS-74 also available in the following wheel bases, 144-inch tractor, 185, 210 and 235-inch.

*Models HS-74-C and HS-104-C also available in the following wheel bases; 146-inch tractor, 185, 210 and 235-inch.

All Model H8 heavy-duty International truck models are equipped with built-in vibration dampered clutches.

LARRABEE

*Note—Bevel gear, worm or double reduction drive rear axle available in models 40 and 50. Bevel or double reduction axles available in 30. Worm or double reduction axles in 60 and 70. Three or more wheel bases in each model. All Larrabee models have hydraulic brakes; 40 up have vacuum booster.

MACK LINE

Other wheelbases furnished on all truck models.

On 6-wheel jobs, 4 rear wheels driven by chains. foot brake on 4 rear wheels.

Hyp.—Hypoid drive, single reduction.

PIERCE-ARROW LINE

*Model FA1 also available as Model FA2, at $2,550 on 149-inch wheel base, weight 4,150 lbs., and also as Model FA3, at $2,250 on 130-inch wheel base, weight 4,200 lbs.

*Model XA1 also available as Model XA2, at $3,550 on 162-inch wheel base, weight 6,800 lbs.

*Model XB1 is also available as Model XB2, at $3,400 on 140-inch wheel base, weight 6,900 lbs.

*Model HB1 is also available as Model HB2, at $4,569 on 140-inch wheel base, weight 8,500 lbs., and also as Model HB3, at $4,600 on 198-inch wheel base, weight 8,700 lbs.

*Model WC1 is also available as Model WC2, at $5,159 on 140-inch wheel base, weight 8,950 lbs., and also as Model WC3, at $5,259 on 198-inch wheel base, weight 9,050 lbs.

*Model RD1 is also available as Model RD2, at $5,450 on 140-inch wheel base, weight 9,650 lbs., and also as Model RD3, at $5,500 on 198-inch wheel base, weight 9,750 lbs.

*Model RF1 is also available as Model RF2, at $5,650 on 204-inch wheel base, weight 10,500 lbs.

†Seven-speed transmission also available.

REPUBLIC LINE

*Model 75-4 also available as Model 75-6, priced $1,495, on 128-inch wheel base, with Lycoming 4SL engine, 6-cyl. 3¼ by 4¼ inches, rated 25.3 h.p., weight 3,150 lbs.

*Model 76-4, also available as Model 76-6, priced $1,675, on 150-inch wheel base, with Lycoming 4SL engine, as in Model 75-6, weight 3,500 lbs.

†Model 60-61, also available with four-wheel brakes, $3,155.

**Model 62, same as 60-61, on 171-inch wheel base, $3,940.

†Model 25W-25WBB available with four wheel brakes.

**Model 66, same as 65, on 200-inch wheel base, $3,759.

**Model 26W, 25WB and 25WBB also available in 3½-ton capacities as Models 825W, 825WB and 825WRB on wheel bases of 165, 156 and 124 inches, priced $3,695.

**Models 35 and 35B also available in 5-ton capacities on wheel bases of 170 and 157 inches, priced $5,145.

**Model 85 also available as Model 86 on 170-inch wheel base, price $2,165.

**Model 50-51 also available as Model 51 on 170-inch wheel base.

REO LINE

*Tonner in wheel base, 123, 138; 1½-ton in wheel base, 137, 156, 153; 2-ton in wheel base, 152, 164; 3-ton in wheel base, 168 179, 184.

RUGBY

F—Chassis weight includes body.

STEWART LINE

*Buddy ¾-ton can be equipped with four wheel brakes.

*Buddy 1-ton can be supplied in 138-inch wheel base.

*Models 16 and 16X can be supplied in 145-inch and 160-inch wheel base.

*Models 24 and 24X can be supplied in 132 and 160-inch wheel base.

*Models 25, 25W, 25X and 25XW can be supplied with dual 32x6 tires, also 160-inch wheel base.

*Model 26X and 26XW can be supplied in 148 and 190-inch wheel base.

*Model 18X can be supplied in 148 and 190-inch wheel base.

*Models 19X and 22X can be supplied in 148, 172, 190 and 220 and 235-inch wheel base.

WHITE LINE

*Bus Model 52 is equipped with Booster Brakes and 50B and 54 with air brakes. Model 52 with air brakes as optional equipment.

Model 60 gross weight capacity, with 32x6 tires, 8,000 lbs.; 34x7.50 balloon tires optional at extra cost.

†Supplied in optional wheel bases.

*Rear axle ratios of 5.1 to 1 and 7.16 to 1 are also available.

TODAY'S NEW PASSENGER CAR REGISTRATIONS FOR MAY, 1929

These Returns are carried in Automotive Daily News from day to day as received up to hour of publication. Recapitulation of these daily reports is published every Saturday

Figures in this table are from R. L. Polk & Co. of Detroit, with the exception of Illinois, which are supplied by the Robinson Advertising Service, Springfield, Ill., and New Jersey, which are furnished by the New Jersey Motor List Co., New Car Division, Trenton, N. J. Readers desiring county, city or town lists, or lists of owners in any given section, may obtain these by addressing any of these three companies.

States	Auburn	Black Hawk	Buick	Cadillac	Chevrolet	Chrysler	DeSoto	Dodge	Durant	Elcar	Erskine	Essex	Ford	Franklin	Gardner	Graham-Paige	Hudson	Hupmobile	Jordan	La Salle	Lincoln
Conn'ticut	63	1	299	71	1261	244	220	273	62		18	462	1683	55	9	201	148	157	5	76	21
Montana	13		83	5	765	65	45	137	69		12	149	842	11		60	52	19		3	2
Oregon	4		91	5	595	36	32	96	145		3	118	1140	8	2	46	48	22		8	4

States	Locomobile	Marmon	Nash	Oakland	Oldsmobile	Packard	Peerless	Pierce-Arrow	Plymouth	Pontiac	Reo	Roosevelt	Stearns-Knight	Studebaker	Stutz	Viking	Whippet	Willys-Knight	Windsor	Miscellaneous	Totals
Conn'ticut		21	320	100	202	177	19	42	140	439	63	68	11	183	8	21	268	82		20	7513
Montana		13	123	26	69	7	1	3	133	141	20	18		46		2	203	30		14	3181
Oregon		11	66	29	66	16		1	107	155	19	16	1	49		7	74	42		3	3065

Aviation Daily News

Wright, Curtiss and Keystone in Big Merger

New York, June 27.—Formation of the Curtiss-Wright Corporation as a holding company to take over the Wright Aeronautical Corporation, the Curtiss Aeroplane and Motor Company and the Keystone Aircraft Corporation was announced here today.

This holding company will have assets of more than $70,000,000, making it the largest aviation holding company in America. Richard F. Hoyt, chairman of the Wright company, will be chairman of the board of the new company, and C. M. Keys, Curtiss president, will hold a similar position in the new company.

Directors of Curtiss approved the merger several days ago at a meeting in Buffalo and the Wright and Keystone directors followed suit yesterday.

Stock in the new company will be offered to stockholders in Wright Aeronautical Corporation on the basis of 3¼ shares of common stock and one share of A stock for each share of Wright. Curtiss stock will be exchanged for 4½ shares of common and one share of A stock.

The new company will have authorized 2,000,000 shares of $2 dividend A stock and 10,000,000 shares of common stock. Directors of Keystone Aircraft and Wright Aeronautical have voted to accept the offer for exchange of stock.

In addition, the holders of Wright Aeronautical Corporation stock will receive warrants to purchase one share of the new holding company stock at $30 for each two shares of Wright Aeronautical held, at any time within three years after the plan becomes effective.

PIONEER OPENS BRANCH OFFICE IN WICHITA, KAN.

Brooklyn, N. Y., June 27.—A branch office of the Pioneer Instrument Company has been opened at 420 Douglas Street, Wichita, Kan., under the direction of Clare W. Bunch, who will be in charge. This is the second mid-west office opened by Pioneer. The first one was established at the Chicago Municipal Airport early this spring.

DAY TO VISIT EUROPE

Paterson, June 27.—Charles Healy Day, vice-president and chief engineer of New Standard Aircraft Corporation, will sail for Europe on July 5 on the Ile de France, where he will join Mrs. Day, who preceded him by a month.

Fuel Distribution And Mixture Session Feature of S. A. E.

(Continued from Page 1)

sions were C. S. Kegereis, Tillotson Manufacturing Company; J. M. Macauley, Chrysler Motors; P. S. Tice, Stewart Warner Corporation; C. L. Petze, Massachusetts Institute of Technology; G. M. Bicknell, Carter Carburetor Corporation; W. P. Deppe, Deppe Motors Corporation; E. D. Herrick, Lycoming Manufacturing Company; D. P. Barnard, 4th, Standard Oil Company.

In addition to Plimpton's paper, presented at the Transporation Conference, Nathaniel Mallouf, president of the Mallouf Haulage and Maintenance Company, presented a paper on "The Science of Business Applied to Motor Truck Operation."

Vying with the technical session, the golf, tennis, archery and boating contests have been proceeding apace. Some fine scores have been run up in all events and the winners of the tournaments will be named at the close of the summer meeting.

An airship session presided over by E. P. Warner featured the program this evening, and V. R. Jacobs of the aeronautical department of the Goodyear Tire and Rubber Company outlined the possibilities of airship transportation.

CHANCE VOUGHT SALES IN MAY SET NEW RECORD

New York, June 27.—Chance Vought Corporation, airplane manufacturing subsidiary of United Aircraft and Transport Corporation, net sales for May were approximately $380,000, new high record, making five months total of $1,113,500. May sales were 61 per cent. greater than last year, while for the five months a corresponding gain of 64 per cent. was shown. The total employed in the Vought factory now exceeds 700 and further additions to plant and facilities have become necessary.

Business of Grand Rapids Metalcraft Sets New High Mark

Grand Rapids, Mich., June 27.—The Grand Rapids Metalcraft Corporation has on hand the largest volume of business in the history of the company, and profits at present are running at the rate of more than twice the annual dividend requirements of $1 per share, according to a letter to stockholders.

Manufacturing capacity has recently been increased 40 per cent., and all plants, including subidiaries, are operating at full capacity. A market for the company's products has been opened up through the aviation industry, where there is a strong demand for moldings, panels, ash receivers, etc. A special department has been opened for taking care of the requirements of this new field.

The new subsidiary, Metalcraft Heater Corporation, of which the corporation owns a substantial interest, is now operating in its model new plant with contracts for heaters sufficient to run the plant at 100 per cent capacity until 1930. It will apparently be necessary to double this plant's capacity within the next sixty days.

STERLING MOTOR TRUCK PAYS COMMON DIVIDEND

New York, June 27.—The common stock of the Sterling Motor Truck Company has been put on a $1.60 per year dividend basis and the first quarterly payment of 40 cents was made on May 15. When the analysis of this company, which appeared in these columns recently, was prepared, word of the new dividend had not been received and thus was not mentioned. The dividend rate should have been stated as $1.60 per year.

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SEDLEY BROWN TO JOIN ERICKSON COMPANY STAFF

New York, June 27.—Sedley Brown, formerly advertising and sales promotion manager of Dodge Brothers Corporation and later sales promotion manager of Hudson Motor Car Company, will join the executive staff of the Erickson Company here July 15.

Mr. Brown has had a long and varied sales experience as writer, publisher and automotive executive. He developed a campaign for the education of Dodge retail salesmen and was brought to the Dodge factory in 1924 to direct the new activity. He also planned the first national sales contest for the company, its regional direct-mail plan and organized and conducted the first Dodge Brothers national sales school.

U. S. INDUSTRIAL ALCOHOL REPORTS $954,264 NET

New York, June 27.—Statement of U. S. Industrial Alcohol Company filed with New York Stock Exchange for quarter ended March 31, 1929, shows net income of $954,264 after depreciation, Federal taxes, etc., equivalent to $2.98 a share earned on 320,000 no-par shares of stock.

U. S. Industrial Alcohol Company will pay for assets of Kentucky Alcohol Corporation, subsidiary of National Distillers Products Corporation, 51,000 shares of its common stock. Total outstanding capital stock will be increased to 371,000 no-par common shares from 320,000 shares.

Up-State New York Plants Operating at Capacity; Output High

(Continued from Page 1)

out automobile goods is characterized by manufacturers as the best in years, with the production of brake linings, upholstery paddings, gaskets, motor robes and similar lines about the highest ever experienced. The Roy Woolen Company, Waterville; National Automotive Fibres Company, Asbestos Spinning and Weaving Corporation, Waterford, and the Slade Products Corporation, Green Island, all report capacity operations employing combined working forces of several thousand hands.

In the motor robe field the advent of the tourist season has placed a heavy call on the Albany Felt Company, and the Huyck Mills at Rensselaer, with the result that peak production is being experienced by both firms.

William E. Millhouse has been elected treasurer of the Burden Iron Company, Troy, to succeed Robert Ferrest, who has retired. The new directors elected by the firm at the annual meeting of the board of trustees include Huntington Jackson, L. S. Horner and George A. Orrok. James A. Burden was re-elected president.

MERRICK IS ELECTED HEAD OF WESTINGHOUSE

New York, June 27.—Directors of the Westinghouse Electric and Manufacturing Company elected Frank A. Merrick president yesterday to succeed E. M. Herr, president since 1911. Mr. Herr, who was elected vice-chairman, resigned as president to take an extended vacation. The announcement was made by A. W. Robertson, chairman of the board.

After the war Mr. Merrick spent two years in London as special representative of the Westinghouse Electric International Company, later returning to the Canadian company. In January, 1925, he was appointed vice-president and general manager of the parent company at Pittsburgh.

KAMERER NAMED AUDITOR OF GENERAL ELECTRIC CO.

Schenectady, June 27.—F. D. Kamerer has been appointed auditor of disbursements of the General Electric Company to succeed George F. Mosher, recently elected assistant treasurer, according to an announcement by S. L. Whitestone, controller.

GOODRICH SILVER FLEET AT DODGE CITY, KANSAS

Dodge City, Kan., June 27.—The Goodrich Silver Fleet has arrived here after a successful trip through Colorado, where the secretary of state signed the Goodwill Scroll. The fleet was welcomed at Pueblo and stopped over in Colorado Springs.

Wanted

High grade men to handle fastest selling auto accessories. Every gas station, service station, garage and car dealer buys on sight.

This proposition brand new.

Good territory still available for men who can produce.

Strictly cash basis. Pocket your profits with each sale.

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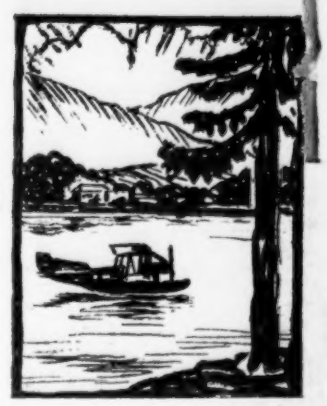

via KEYSTONE-LOENING AMPHIBIAN "AIR YACHT"

That industry thrives on new ideas is realized above all by members of the Society of Automotive Engineers. S. A. E. members will readily recognize, moreover, as one of the newest ideas in industry the company-owned airplane for the swift travel of executives and salesmen and for the delivery of goods when time is at a premium.

Of all types of planes of proven performance available to industry, none offers such all-around usefulness as the amphibian plane with its ability to alight on either land or water—thus affording travel by the shortest route between two points, with added safety all the way. Aeronautical engineers recognize in the Keystone-Loening "Air Yacht" the highest development of present-day amphibians. In selecting the Air Yacht for important work, Business follows in the footsteps of the various branches of the U. S. Government in which the Keystone-Loening Air Yacht is called upon for the unfailing fulfillment of difficult and hazardous missions.

In over five million miles of flying, whether the job be the taking of mail off the Leviathan far at sea, the Alaskan Survey, Patrol Work by the U. S. Coast Guard, the Army Good-Will Trip in South America, or the more prosaic, but none the less important, work of daily transportation on regular air routes, the Air Yacht has proved its claim to supremacy over all ships of the type.

The Air Yacht was designed by Grover Loening, one of the foremost aeronautical engineers of the country and the recognized authority on the amphibian type of plane. It is powered with a Wright Cyclone 525 H. P. air-cooled engine, big brother of the famous Whirlwind. It carries a total of eight persons with a cruising range of over 500 miles on 140 gallons of gasoline. It has a maximum speed of 130 M. P. H., and a cruising speed of 105 M. P. H.

The Keystone-Loening Air Yacht is known the world over as "The Airplane that does the hard work for America."

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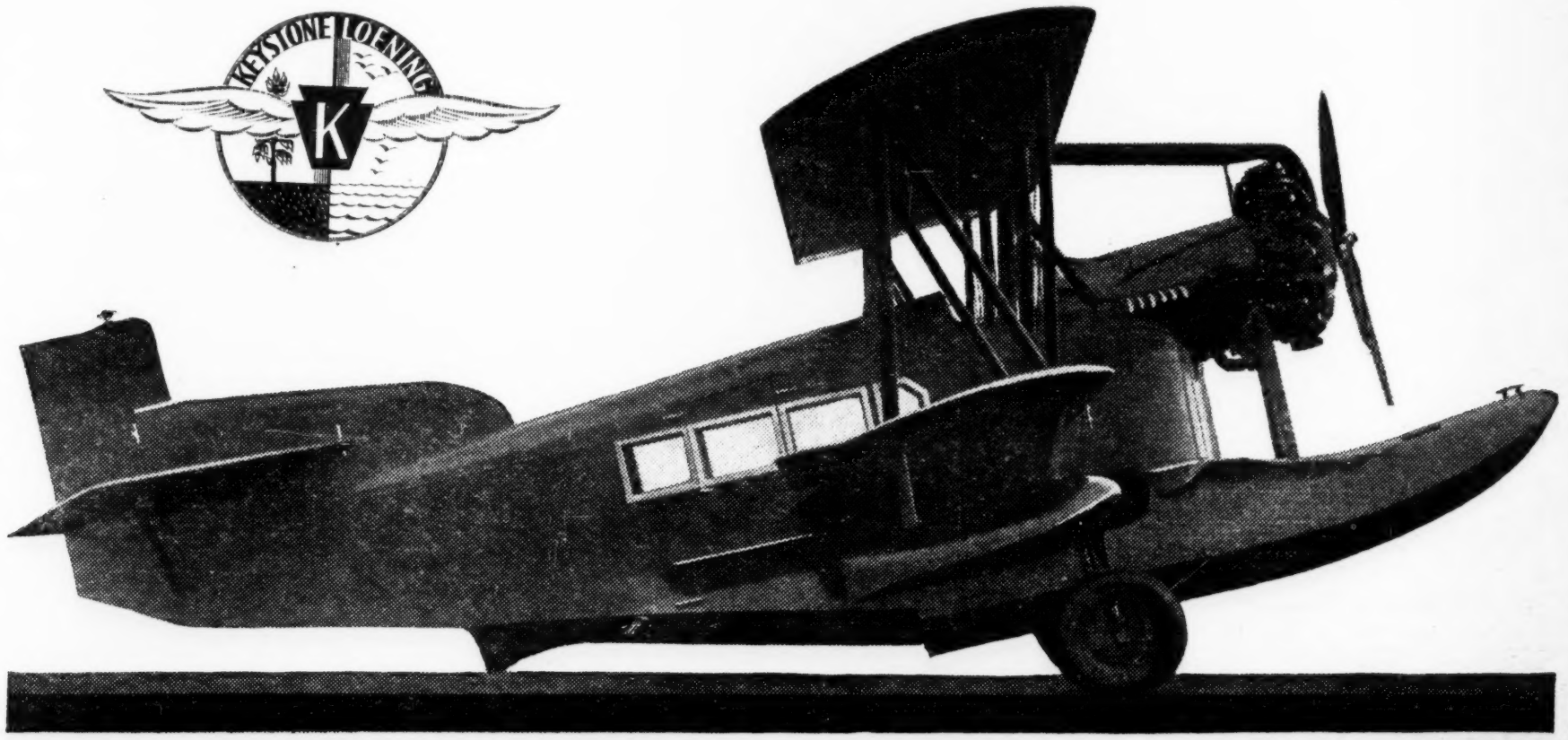
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